Route 460 Location Study

SOCIOECONOMIC

Technical Report

May 2005

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1.0 AFFECTED ENVIRONMENT

1.1 SOCIAL ENVIRONMENT

1.1.1 Methodology and Assumptions

The social environment for the Route 460 study area includes a baseline of present and/or planned conditions. The study area is bound by Routes 10/32 to the east, Route 10 to the north, and Interstate 295 to the west. The southern boundary is a line three miles south of, and running parallel to, Route 460.

Population, race and ethnicity, income levels, and housing condition information were obtained from the U.S. Census Bureau. The Census Bureau collects and reports data for jurisdictions, as well as for several geographic units that are subsets of the jurisdiction total (i.e., Census tract, block group, and block). To provide regional comparisons, Census data were collected and presented at the following levels: state, city/county, place, and study area. Place level data were also used for the four incorporated towns within the study area (i.e., Ivor, Waverly, Windsor, and Wakefield). The two remaining towns of Zuni and Disputanta, as well as the Kings Fork community in the City of Suffolk, are not incorporated and, therefore, are not considered "places".

Census block group level data were used to develop estimates of the study area demographics; however, the shape of the study area does not correspond to jurisdiction boundaries or Census block group geography. Therefore, Census block group data acquired for analysis include areas not within the study area. To prevent overcounting, a map of the study area was placed over a block group map in a Geographic Information Systems (GIS) software program. Using the software, it was possible to determine which block groups were located completely within the study area boundary and which block groups only included a portion within the study area boundary. The demographic characteristics associated with each block group were assumed uniform throughout the block group. For example, if one block group has a population of 2,000 and 20 percent of the block group was in the study area, those 2,000 residents are assumed to be distributed evenly throughout the block group. The population of the block group within the study area was calculated as follows: 2,000 x 0.20 = 400 residents. For all monetary data (median income and median value of specific owner-occupied housing units), block group data was averaged within the jurisdiction. For example, if Sussex County has four block groups within the study area, the values of median income would be averaged among those four block groups to determine the median income for the Sussex County portion of the study area.

General information regarding communities, neighborhoods, and public facilities was gathered from field review, meetings with local representatives, and public involvement. The field review and meetings primarily occurred between summer 2003 through fall 2004. Additional information was gathered from local comprehensive plans and reports and secondary mapping sources (e.g., GIS data provided by localities, Alexandria Drafting Company maps, and aerial photography).

1.1.2 Population

Table 1-1 provides population data from the 2000 US Census for the study area. There are over 45,000 residents within the study area. Over sixty percent of study area residents live in Isle of Wight County and in Prince George County, the two jurisdictions with the most residents in the study area. The City of Suffolk has the largest population of the jurisdictions within the study area; however, a relatively small portion of Suffolk is located within the study area limits. Approximately 18 percent of study area residents live within Suffolk. The smallest percentage of study area residents lives within Southampton County.

For the seven main communities along Route 460, data collection was performed either on the place level or block group level. The towns of Waverly, Wakefield, Ivor, and Windsor are incorporated and, therefore, are considered "places" by the Census Bureau. Unincorporated areas, such as the towns of Disputanta and Zuni, and the Kings Fork community in Suffolk are not identified "places" by the Census Bureau; therefore, they are not provided in this table. Data for city and county jurisdictions include their respective

town data (i.e., the populations of Waverly and Wakefield are included in the population of Sussex County).

Table 1-1
POPULATION FOR THE STUDY AREA AND JURISDICTIONS REPRESENTED BY THE STUDY AREA

Jurisdiction or sub-Jurisdiction	Study Area	Jurisdiction Total	Percent Population within Study Area (or Jurisdiction)	Percent of Study Area Population
Isle of Wight County	13,086	29,728	40.6%	30.4%
Town of Windsor	933[1]	933[1]	100%	2.3%
Prince George County	13,987	33,047	37.8%	31.4%
Southampton County	1,110	17,482	4.2%	1.9%
Town of Ivor	315[2]	315[2]	100%	0.8%
Surry County	3,564	6,829	52.2%	9.0%
Sussex County	5,437	12,504	29.5%	9.3%
Town of Wakefield	1,045[3]	1,045[3]	100%	2.6%
Town of Waverly	2,360[3]	2,360[3]	100%	5.9%
City of Suffolk	8,407	63,677	11.2%	18.0%
Study Area Jurisdictions Total	45,591	163,267	24.3%	100%

[1] Included in Isle of Wight County population. Census 2000 population is prior to Windsor's annexation in 2001. The annexation was estimated to result in a total population of 2,300.
[2] Included in Southampton County population
[3] Included in Sussex County population
Source: US Census Bureau, Census 2000

Table 1-2 illustrates the population trends for jurisdictions in the study area. Isle of Wight County and the City of Suffolk have grown at a faster rate than the Commonwealth over the past three decades, while Southampton County has had an overall population loss. Of the communities along Route 460 in the study area, Kings Fork, Waverly, and Windsor have experienced population gains since 1990.

Table 1-2
POPULATION TRENDS FOR THE STUDY AREA JURISDICTIONS

Jurisdiction	1970	1980	1990	2000	Average Annual Compound Rate 1970-2000	Total Percent Change 1970-2000	Total Population Change 1970-2000
Virginia	4,648,494	5,346,818	6,187,358	7,078,515	1.4%	52.3%	2,430,021
Isle of Wight County	18,285	21,603	25,053	29,728	1.6%	62.6%	11,443
Prince George County	29,092	25,733	27,394	33,047	0.4%	13.6%	3,955
Southampton County	18,582	18,731	17,550	17,482	-0.2%	-5.9%	(1,100)
Surry County	5,882	6,046	6,145	6,829	0.5%	16.1%	947
Sussex County	11,464	10,874	10,248	12,504	0.3%	9.1%	1,040
City of Suffolk[1]	9,858	47,621	52,141	63,677	6.2%	545.9%	53,819

[1] City of Suffolk merged with Nansemond County in 1974
Source: US Census Bureau, Census 1970 - 2000

Table 1-3 presents the breakdown of age groups in the study area. Persons under the age of 18 comprise the largest percentage of the study area population. With almost 12,000 youths, they represent about 26 percent of the study area population. The proportion of youth is consistent with that of the Commonwealth of Virginia, which is 24.6 percent. Persons between the ages of 45 and 64 are the second largest group, representing 25 percent of the study area. Age distribution within the study area in each jurisdiction is similar to the overall distribution for the study area. This indicates that there are no unique concentrations of children or elderly in any particular jurisdiction.

Table 1-3
POPULATION AGE FOR THE STUDY AREA BY REGION

Jurisdiction	Total	Under 18	18-24	25-34	35-44	45-64	65 and over	Total
Virginia	7,078,515	1,738,262	679,398	1,036,965	1,200,690	1,630,867	792,333	7,078,515
Virginia (percent)	100%	24.6%	9.6%	14.6%	17.0%	23.0%	11.2%	100%
Study Area	45,591	11,905	3,213	5,543	8,415	11,418	5,097	45,591
Study Area (percent)	100%	26.1%	7.0%	12.2%	18.5%	25.0%	11.2%	100%

Source: US Census Bureau, Census 2000

1.1.3 Racial and Ethnic Characteristics

Table 1-4 through Table 1-5 provide a summary of racial and minority characteristics for the jurisdictions within the Route 460 project area. White is the largest racial group for Isle of Wight, Prince George, Southampton, and Surry Counties, as well as the City of Suffolk. Black/African-American is the largest racial group in Sussex County. Hispanic or Latino persons comprise only two percent of the study area population.

The census defines minority as all persons who identified themselves as other than white non-Hispanic in the 2000 Census. In Virginia minorities comprise approximately 28 percent of the total population. Within the study area, minorities account for approximately 37 percent of the population. Although this number is higher than the statewide percentage, it is slightly lower than the minority percentage of the jurisdiction total population for study area communities (44 percent). Among minorities, Black/African-Americans are the largest group with 40 percent of all of the six jurisdictions and 33 percent of the study area proper. This includes Hispanic and Non-Hispanic African-Americans, although the former makes up 0.3 percent of the jurisdiction's Black population and 0.4 percent of the study area's.

Figure 2.3-2 illustrates the distribution of minorities at the Census block level. Minorities are found throughout the study area. Along Route 460 in the study area, the largest percentage of minority residents (specifically, African-Americans) are located north and south of Route 460 in New Bohemia, east of Disputanta, south and west in Waverly, west and north of Wakefield, north and south of Ivor, and south of Route 460 in Zuni and Windsor. As noted in Table 1-6, the Towns of Waverly and Wakefield have the highest concentration of minorities (with 63 and 51 percent, respectively). Almost all the minorities in these towns are African-American (1,494 of the 1,500 in Wakefield; 513 of 536 in Waverly).

Table 1-4
STUDY AREA RACIAL AND ETHNIC CHARACTERISTICS

Jurisdiction	Isle of Wight County	Prince George County	Southampton County	Surry County	Sussex County	City of Suffolk	Entire Study Area
Total Population	13,086	13,987	1,110	3,564	5,437	8,407	45,591
White [1]	8,493	9,967	683	1,647	2,214	6,054	29,056
Black or African American [1]	4,358	3,420	395	1,848	3,171	2,097	15,289
American Indian and Alaska Native [1]	19	37	17	0	6	29	108
Asian [1]	21	205	0	7	5	72	311
Hawaiian, Other Pacific Islander[1]	0	15	0	0	5	10	30
Other race [1]	46	64	0	0	6	54	170
Two or more races[1]	149	279	15	62	30	91	627
Hispanic or Latino[2]	104	394	5	41	60	179	783

[1] Regardless of Hispanic/Latino designation.
[2] All Hispanics regardless of race. Note: results in double counting.
Source: US Census Bureau, Census 2000

Table 1-5
MINORITY POPULATIONS IN STUDY AREA JURISDICTIONS

Jurisdiction	Total Population	White Non-Hispanic	Minority[1]	Percent Minority
Isle of Wight County	29,728	21,038	8,690	29%
Prince George County	33,047	19,464	13,583	41%
Southampton County	17,482	9,747	7,735	44%
Surry County	6,829	3,170	3,659	54%
Sussex County	12,504	4,560	7,944	64%
City of Suffolk	63,677	33,828	29,849	47%
Study Area Jurisdictions Total	163,267	91,807	71,460	44%

[1] Total minority is the sum of all persons other than white-non-Hispanic. Hispanics may be of any race.
Source: US Census Bureau, Census 2000

Table 1-6
MINORITY POPULATIONS WITHIN THE STUDY AREA PORTION OF JURISDICTIONS

Jurisdiction or sub-Jurisdiction	Total Population	White Non-Hispanic	Minority[1]	Percent Minority
Virginia	7,078,515	5,120,110	1,958,405	28%
Isle of Wight County	13,086	8,432	4,654	36%
Town of Windsor	933	849	84	9%
Prince George County	13,987	9,778	4,208	30%
Southampton County	1,110	683	427	38%
Town of Ivor	315	238	77	24%
Surry County	3,564	1,622	1,942	55%
Sussex County	5,437	2,196	3,241	60%
Town of Wakefield	1,045	509	536	51%
Town of Waverly	2,360	860	1,500	64%
City of Suffolk	8,407	5,968	2,439	29%
Study Area Jurisdictions Total	45,591	28,680	16,911	37%

[1] Total minority is the sum of all persons other than white-non-Hispanic. Hispanics may be of any race.
Source: US Census Bureau, Census 2000

1.1.4 Income characteristics

Although the median household income within the study area is lower than that of the Commonwealth, it is higher (about 10 percent) than the average for the sum of the study area jurisdictions. Within the study area, residents of Suffolk reported the highest median income and residents of the Town of Wakefield reported the lowest median income. Only in Southampton County is the median household income lower in the study area than the rest of the jurisdiction.

Table 1-7 illustrates income characteristics for the study area and whole jurisdictions at the household level. The data are from the 2000 US Census and reports the household income for 1999, the last full year prior to the Census.

Table 1-7
MEDIAN HOUSEHOLD INCOME

Jurisdiction or sub-Jurisdiction	Whole Jurisdiction	Study Area[1]	Difference	Percent Difference
Virginia	$46,667	$42,191	-$4,476	-9.6%
Isle of Wight County	$45,387	$46,357	$970	2.1%
Town of Windsor	$36,528	$36,528	n/a	n/a
Prince George County	$49,877	$53,416	$3,539	7.1%
Southampton County	$33,995	$30,536	-$3,459	-10.2%
Town of Ivor	$34,583	$34,583	n/a	n/a
Surry County	$37,558	$37,978	$420	1.1%
Sussex County	$31,007	$31,367	$360	1.2%

Jurisdiction or sub-Jurisdiction	Whole Jurisdiction	Study Area[1]	Difference	Percent Difference
Town of Wakefield	$28,500	$28,500	n/a	n/a
Town of Waverly	$33,698	$33,698	n/a	n/a
City of Suffolk	$41,115	$53,489	$12,374	30.1%
Average of Study Area Jurisdictions	$39,823	$42,191	$2,368	5.9%

[1] Averaged across block groups within study area.
Source: US Census Bureau, Census 2000

Table 1-8 and Table 1-9 present the 2000 Census data for study area residents with incomes below the poverty level. The Census determines persons below the poverty level by:

- The income of the householder
- The age of the householder
- The number of related individuals within the household (unrelated members such as roommates are excluded)
- The number of children within the household.

The poverty threshold (commonly referred to as the poverty level) for a single person under the age of 65 in the year 1999 was $8,959. If the householder were age 65 or over, that threshold would have been $8,259. A family of four (two under-65 adults and two children) had a poverty threshold of $17,463. The US Census Bureau identifies a household as all the persons who occupy a housing unit. A family is a unit that consists of a householder and one or more other persons living in the same household who are related to the householder by birth, marriage or adoption.

The FHWA defines low-income as the Department of Health and Human Services' (HHS) poverty guidelines (FHWA, 1998). Poverty guidelines are issued annually in the Federal Register and are a "simplification of the [Census] poverty thresholds for use for administrative purposes" (HHS, 2000). In 2000, the poverty guideline for a family of four in the 48 contiguous states and D.C. was $17,050, while in 2004 the poverty guideline was $18,850 (HHS, 2004). Estimated numbers of households or persons at or below the *poverty guidelines* are not readily available from the 2000 Census or other federal data source at an appropriate geographic level for this analysis. The Census poverty threshold is, however, a comparable basis for analysis and is more readily available than the HHS poverty guidelines.

When compared to the Commonwealth, the jurisdictions within the study area have a higher percentage of low-income persons (11.5 percent), while the study area as a whole has a slightly lower level at 9.3 percent. Figure 2.3-3 illustrates the distribution and concentration of low-income populations at the Census block group level within the study area. Low-income populations are found throughout the study area. Along Route 460 in the study area, the highest concentrations of low-income populations (specifically, with block group populations above 15 percent) are located north of Route 460 between New Bohemia and Disputanta, in southern Waverly, and northern Wakefield. As noted in Table 1-9, within the study area, the Counties of Isle of Wight, Southampton, Surry, and Sussex and the Towns of Wakefield and Waverly exceed the statewide low-income population average of 9.6 percent.

Table 1-8
POVERTY CHARACTERISTICS FOR JURISDICTIONS WITHIN THE STUDY AREA

Jurisdiction	Persons for Whom Poverty Level is Determined[1]	People Below Poverty Level	Percent of People Below Poverty Level
Virginia	6,844,372	656,641	9.6%
Isle of Wight County	29,537	2,449	8.3%
Prince George County	27,986	2,234	8.0%
Southampton County	15,800	2,305	14.6%
Surry County	6,808	734	10.8%
Sussex County	9,931	1,597	16.1%
City of Suffolk	62,523	8,264	13.2%
Study Area Jurisdictions Total	152,585	17,583	11.5%

[1] U.S. Census poverty status is determined for all people except institutionalized people, people in military group quarters, people in college dormitories, and unrelated individuals under 15 years old.

Source: US Census Bureau, Census 2000

Table 1-9
POVERTY CHARACTERISTICS FOR THE STUDY AREA

Jurisdiction or sub-Jurisdiction	Persons for Whom Poverty Level is Determined[1]	People Below Poverty Level	Percent of People Below Poverty Level
Virginia	6,844,372	656,641	9.6%
Isle of Wight County	13,850	1,259	9.7%
Town of Windsor	933	82	8.8%
Prince George County	13,850	1,092	7.9%
Southampton County	1,086	153	14.1%
Town of Ivor	313	16	5.1%
Surry County	3,548	356	10.0%
Sussex County	4,899	866	17.7%
Town of Wakefield	1,043	140	13.4%
Town of Waverly	2,245	353	15.7%
City of Suffolk	7,902	417	5.3%
Study Area Total	44,311	4,143	9.3%

[1] Poverty status is determined for all people except institutionalized people, people in military group quarters, people in college dormitories, and unrelated individuals under 15 years old.

Source: US Census Bureau, Census 2000

1.1.5 Housing

Table 1-10 presents selected housing data for the Route 460 study area and the Commonwealth of Virginia. The Commonwealth has a housing ownership rate of 63.2 percent with 29.7 percent renting. The remaining 7.1 percent include institutionalized persons, residents of military group quarters, and residents of dormitories/group quarters. The study area, in comparison, has a higher home ownership rate than the Commonwealth with over 75 percent of the housing units being owner-occupied. Prince George County, the City of Suffolk, and Isle of Wight County lead the study area with 81.0 percent, 80.1 percent, and 75.2 percent, respectively. The only jurisdiction with a rate below the Commonwealth's is Sussex County with 58.7 percent.

Table 1-11 presents the rate of vacancy and value of housing units within the jurisdictions in the study area during the 2000 Census. The rate of vacancy for the Commonwealth is just over seven percent, which is slightly higher than that of the study area (6.3 percent). The jurisdictions with the lowest vacancy rate are the City of Suffolk (3.5 percent) and Prince George County (4.5 percent). The jurisdictions with the highest vacancy rates are Southampton and Sussex Counties, with rates just over 10 percent. Median value of owner-occupied units ranges according to locality. Within the study area, the City of Suffolk had the highest median value at $129,600 and the Town of Wakefield had the lowest median value at $67,700.

Table 1-10
STUDY AREA HOUSING DATA: OCCUPANCY

Jurisdiction or sub-Jurisdiction	Total Housing Units	Owner Occupied	Percent of Owner Occupied	Renter Occupied	Percent of Renter Occupied
Virginia	2,904,192	1,837,939	63.2 %	861,234	29.7 %
Isle of Wight County	5,345	4,020	75.2%	967	18.1%
Town of Windsor	424	351	82.8%	53	12.5%
Prince George County	5,365	4,348	81.0%	775	14.4%
Southampton County	484	338	69.7%	98	20.2%
Town of Ivor	159	101	63.5%	38	23.9%
Surry County	1,449	1,052	72.6%	256	17.7%
Sussex County	2,210	1,297	58.7%	685	31.0%
Town of Wakefield	488	309	63.3%	120	24.6%
Town of Waverly	970	599	61.8%	280	28.9%
City of Suffolk	3,021	2,421	80.1%	494	16.3%
Study Area Jurisdictions Total	17,876	13,475	75.4%	3,275	18.3%

Source: US Census Bureau, Census 2000

Table 1-11
STUDY AREA HOUSING DATA: VACANCY AND VALUE

Jurisdiction or Sub-Jurisdiction	Total Housing Units	# Vacant	Percent Vacant	Median Value of Owner-Occupied Units	Number without Complete Plumbing
Virginia	2,904,192	205,019	7.1%	$125,400	33,265
Isle of Wight County	5,345	358	6.7%	$117,107	54
Town of Windsor	424	20	4.7%	$100,300	2
Prince George County	5,365	243	4.5%	$116,645	10
Southampton County	484	49	10.1%	$84,700	48
Town of Ivor	159	20	12.6%	$85,800	4
Surry County	1,449	142	9.8%	$87,600	36
Sussex County	2,210	228	10.3%	$71,933	88
Town of Wakefield	488	59	12.1%	$67,700	6
Town of Waverly	970	91	9.4%	$73,000	21
City of Suffolk	3,021	107	3.5%	$129,600	33
Study Area Jurisdictions Total	17,876	1,126	6.3%	$111,739[1]	269

[1] Calculated by proportioning the median value of each jurisdiction by percentage of jurisdiction within study area.
Source: US Census Bureau, Census 2000

1.1.6 Communities and Neighborhoods

Seven main communities are located along Route 460 in the study area. From the western end of the study area, these communities include Disputanta, Waverly, Wakefield, Ivor, Zuni, Windsor, and the Kings Fork area of the City of Suffolk. Many of these communities developed as stops along the Petersburg and Norfolk Railroad line that connected Petersburg and Norfolk in 1858 (Southampton County, 2000). In the 1930s, Route 460 was built adjacent to the railroad line. The larger communities, such as Waverly, Wakefield, and Windsor, have declined in population and employment due to the loss of agricultural and timber jobs. Smaller communities, such as Disputanta, Ivor, and Zuni, have had a similar decline and continue to remain almost entirely residential. Kings Fork has experienced a substantial increase in residential development in the late 1990s, consistent with the overall growth in the City of Suffolk.

For the Route 460 Location Study, rural and suburban neighborhoods were also evaluated for potential community impacts. Neighborhoods are smaller than the communities listed above and generally include subdivisions, manufactured home parks, and clusters of rural residential development. Neighborhoods are both located within and near these seven communities, as well as in the more rural portions of the study area. Some developments are scattered throughout the County, such as in Prince George County where subdivisions have developed off Routes 156 and 625. Other neighborhoods, such as in Isle of Wight and Sussex Counties, are located in and adjacent to the communities of Waverly, Wakefield, and Windsor. Cohesion within communities and neighborhoods is a function of the area residents' day–to-day interactions and the perceived unity of residents in a specific area. Shared facilities and major services often act as community focal points. Community focal points include both public and private facilities. Public facilities are discussed in the following section. Based on comments provided during the public involvement process and interviews with local representatives, the seven communities along the project corridor have relatively high levels of community cohesion. The communities themselves are compact

and offer multiple opportunities for interaction at local commercial and community facilities. Additionally, the communities have a large, stable resident population and that population often includes related family members. For example, the Mayor of Waverly provided the study team with many examples of the high level of community cohesion based on the community's responsiveness to Hurricane Isabel in September 2003. Other community representatives provided similar examples.

Table 1-12 depicts the attributes of the seven main communities along Route 460. Waverly, Wakefield, and Windsor have the largest number of community facilities, focal points, and services. With populations between 1,000 and 2,500 people, these communities are large enough to provide a more diverse range of facilities to serve the community and the surrounding rural area. The smaller communities (e.g. Disputanta, Ivor, Zuni, and the Kings Fork area) have at least some religious facilities and a post office.

Table 1-12
COMMUNITY FACILITIES, FOCAL POINTS, AND SERVICES IN COMMUNITIES ALONG ROUTE 460

Community	Post Office	Schools/ Libraries	Emergency Services	Religious Facilities (number)	Museums/ Events/ Tourist Attractions	Other Services (major community, medical, or shopping facilities)
Disputanta, Prince George Co.	Yes	Harrison Elementary Disputanta Library	Yes	5-10	---	---
Waverly, Sussex Co.	Yes	Blackwater Regional Library Annie B. Jackson Elementary	Yes	10-15	Miles B. Carpenter Peanut Museum	Waverly health care (nursing home) Fresh Pride (grocery store)
Wakefield, Sussex Co.	Yes	Blackwater Regional Library (in the Foundation) Tidewater Academy (private) Ellen W. Chambliss Elementary	Yes	10-15	Virginia Diner Shad Planking (annual event in April)	The Foundation (library and multiuse facility) Wakefield Ballpark Wakefield Great Value (grocery store) Wakefield Municipal Airport
Ivor, Southampton Co.	Yes	---	Yes	1-5	---	Ivor Furniture Company
Zuni, Isle of Wight Co.	Yes	---	---	1-5	---	---
Windsor, Isle of Wight Co.	Yes	Blackwater Regional Library Windsor Middle School Windsor High School	Yes	10-15	---	Tandem Health Care (nursing home) Food Lion (grocery store)
Kings Fork, City of Suffolk	---	Mt. Zion Elementary Nansemond-Suffolk Academy (private) Kings Fork Middle Kings Fork High Pruden Center	---	1-5	---	Kings Fork Ruritan Club Kings Fork athletic fields Diamond Springs Park

[1] Sussex County plans to consolidate its three elementary schools (Annie B. Jackson in Waverly, Ellen W. Chambliss in Wakefield, and Jefferson in Jarratt) to a single elementary school near Sussex Central Middle School and Sussex Central High School. After the consolidation, the Towns of Waverly and Wakefield plan on converting the elementary school buildings to community centers.

Source: Michael Baker, Jr., 2005

1.1.7 Public Facilities

Public facilities exist throughout the study area. These facilities provide municipal government services, education, and emergency services. Public facilities in the study area also include parks and recreation facilities. Parks and recreation facilities are discussed in detail in the *Land Use, Parklands, and Farmlands Technical Report* and Chapter 3 and 4 of the DEIS. Other facilities are privately held, but may serve as important institutions within the community. These institutional facilities include churches, cemeteries, and private schools. Figure 1.1-1 identifies the locations of these public and institutional facilities, including airports, cemeteries, churches, colleges, schools, libraries, government buildings, emergency medical services, fire stations, police stations, post offices, and hospitals.

Municipal government buildings, including town halls, are located within the towns of Surry, Waverly, Wakefield, Dendron, Ivor, and Windsor. Prince George, Surry, and Isle of Wight Counties have county seats in the study area. State and federal agencies also have offices within the study area, including the Virginia State Police in Waverly, the Virginia Department of Agricultural and Consumer Services in Ivor, and the National Weather Service Forecast Office in Wakefield.

The study area contains a number of public school facilities, as well, a vocational school, and a post-secondary school. There are two correctional facilities in the study area: the Petersburg Jail Farm and a juvenile detention center in Prince George County. Three library systems serve the study area: the Suffolk Public Library, the Blackwater Regional Library, and the Appomattox Regional Library. Sheriff's offices are located throughout the study area. Most operate from the county administration and/or an office in the county seat.

1.1.7.1 Prince George County

Table 1-13 lists the public facilities in the Prince George County portion of the study area. Churches are located throughout the study area portion of the County but are also found in specific clusters near the Prince George County Government Center, along Prince George Drive, and in Disputanta. These three areas also contain a majority of the public facilities.

Table 1-13
PRINCE GEORGE COUNTY INSTITUTIONAL AND PUBLIC FACILITIES IN THE STUDY AREA

Facility Type	Facility Name	Location
Administrative	Prince George Government Center	6400 Courthouse Rd, Prince George
Church	Abundant Life Pentecostal Holiness	10007 Sandy Ridge Road, Hopewell
Church	Bethlehem Congregational	10501 Pole Run Rd Disputanta
Church	Centerville Congregational	14000 Centerville Road, Disputanta
Church	Charity Baptist	4716 Ruffin Road, Prince George
Church	Church of the Sacred Heart	4415 County Drive, Petersburg
Church	Faith Lutheran	8200 Prince George Drive
Church	First Baptist	10209 County Dr, Disputanta
Church	Gregory Memorial Chapel	6300 Courthouse Rd, Prince George
Church	Harrison Grove	10415 Merchant Hope Rd, Hopewell
Church	Lebanon Baptist	10032 County Dr, Disputanta
Church	Martin's Brandon Episcopal Church	18706 James River Drive, Burrowsville
Church	Merchants Hope Episcopal	11500 Merchant Hope Rd, Hopewell
Church	Moorish Science Temple	7200 Centennial Road, Prince George
Church	Mount Hope Baptist	10300 Lawyers Road, Prince George

Facility Type	Facility Name	Location
Church	Newville United Methodist Church	9014 Hines Road, Disputanta
Church	Oakland Baptist	12601 Prince George Dr, Disputanta
Church	Pleasant Grove Baptist	4405 Prince Geo. Dr, Prince George
Church	Pleasant Grove Baptist	6500 Courthouse Rd, Prince George
Church	Pleasant Grove Baptist	4405 Prince Geo. Dr, Prince George
Church	Prince George Baptist	6717 Middle Road, Prince George
Church	Prince George Christian	7605 Prince Geo. Dr, Prince George
Church	Prince George Presbyterian	Prince George Drive, Prince George
Church	Salem United Methodist	Rt. 10 (James River Drive) & Rt. 611 (Lebanon Rd.), Spring Grove
Church	Sycamore United Methodist	9710 Old Stage Road, Prince George
Church	Trinity United Methodist	10021 County Dr, Disputanta
Church	Union Branch Baptist	3356 Union Branch Rd, Petersburg
Church	Unity Baptist	4951 Mt. Sinai Road, Prince George
Fire	No. 1 Company	6400 Courthouse Rd, Prince George
Fire	No. 2 Company	Route 625, Disputanta
Government	Crater Juvenile Detention Home	6102 County Drive, Disputanta
Government	Petersburg Jail Farm	5800 County Drive, Disputanta
Library	Appomattox Regional Library System	6402 Courthouse Rd, Prince George
Library	Appomattox Regional Library System	10010 County Drive, Disputanta
Police	Prince George County	6400 Courthouse Rd, Prince George
Post Office	Disputanta Post Office	10001 County Drive, Disputanta
Post Office	Prince George Post Office	6605 Courthouse Rd, Prince George
School	Beazley Elementary	6700 Courthouse Rd, Prince George
School	Harrison Primary	12900 East Quaker Road, Disputanta
School	J.E.Moore Middle	11455 Prince George Dr, Disputanta
School	N.B. Clements, Jr. Middle	7800 Laurel Spring Road, Prince George
School	North Primary	11100 Old Stage Rd, Prince George
School	Prince George County High	7801 Laurel Spring Road, Prince George

Source: Prince George County Website (http://www.princegeorgeva.org/church.htm), Alexandria Drafting Company, Parsons Brinckerhoff.

1.1.7.2 Sussex County

Table 1-14 lists the public facilities in the Sussex County portion of the study area. The majority of the all the public facilities—including churches—are clustered in the towns of Wakefield and Waverly.

1.1.7.3 Surry County

Table 1-15 lists the public facilities in the Surry County portion of the study area. This portion includes the Town of Dendron and a portion of the Town of Surry—the county seat. The study area portion of Surry contains all the County schools including one campus of the private Tidewater Academy (the upper school is located in the Town of Wakefield). The public facilities are clustered in these two towns.

1.1.7.4 Southampton County

Table 1-16 lists public facilities in the Southampton County portion of the study area. There are fewer facilities in this jurisdiction than others in the study area. The majority of Southampton County's services (such as the Sheriff's Department) are located near the county seat of Courtland, outside of the study area. There are a few municipal services in the Town of Ivor, as well as one state government office. Due to the proximity to Isle of Wight County, several locales in Southampton County have Zuni addresses.

Table 1-14
SUSSEX COUNTY INSTITUTIONAL AND PUBLIC FACILITIES IN THE STUDY AREA

Facility Type	Facility Name	Location
Airport	Wakefield Municipal	10163 General Mahone Hwy, Wakefield
Church	Christ Episcopal Church	203 E Main St, Waverly
Church	Christian Charities Deliverance Church	228 Virginia Ave, Wakefield
Church	Church of Jesus Christ Latter Day Saints	202 Prospect St, Wakefield
Church	First Baptist Church	217 S County Dr, Wakefield
Church	Higher Way Full Gospel Baptist Church	130 Bank St, Waverly
Church	House of Prayer	216 Sussex Avenue, Wakefield
Church	Jerusalem Baptist Church	4891 Carsley Rd, Waverly
Church	Kingdom Harvest Church	Town of Wakefield
Church	Lily of the Valley Deliverance Center	411 Oak Street, Waverly
Church	Mars Hill AME Zion Church	111 Williams Lane, Wakefield
Church	New Birth Community Church	228 Virginia Avenue, Wakefield
Church	Oak Grove Baptist Church	419 Rocky Hock Rd, Wakefield
Church	Piney Grove AME Zion Church	34212 Chinquapin Rd, Waverly
Church	Plank Road Baptist	Waverly
Church	Rose of Sharon	Elm Street, Waverly
Church	Shilo Holiness Temple	Route 40, Waverly
Church	St. Paul Holiness Church of Waverly	307 Maple Street, Waverly
Church	Wakefield Baptist	104 W Church St, Wakefield
Church	Wakefield United Methodist	205 W Church St, Wakefield
Church	Waverly Baptist	E Main St, Waverly
Church	Wilborne Baptist	Arnwood Road, Waverly
Church	Zion Hill Holiness	Waverly
Fire Department	Wakefield Fire Department	155 Fleetwood Ave, Wakefield
Fire Department	Waverly Fire Department	119 Bank St, Town of Waverly
Library	Blackwater Regional Library, Wakefield	100 Wilson Avenue, Wakefield
Library	Blackwater Regional Library, Waverly	125 Bank Street, Waverly
Municipal	Town of Wakefield	10315 Kelly Lane, Wakefield
Museum	Carpenter Museum	201 Hunter Street, Waverly
Police	Virginia State Police	438 East Main Street, Waverly
Police	Waverly Police	119 Bank St, Town of Waverly
Post Office	Wakefield Main Office	312 W Church St, Wakefield
Post Office	Waverly Main Office	325 W Main St, Waverly

Facility Type	Facility Name	Location
School	Annie B. Jackson Elementary*	408 School St, Waverly
School	Ellen W. Chambliss Elementary*	10415 Higgins St, Wakefield
School	Tidewater Academy (Upper School)	217 Church Street, Wakefield
Special	National Weather Service Forecast Office	10009 Mahone Hwy, Wakefield

* All Surry County Public Schools will be consolidated into one elementary, one secondary, and one high school in Sussex (outside of study area).
Source: Sussex County Department of Planning, Parsons Brinckerhoff.

Table 1-15
SURRY COUNTY INSTITUTIONAL AND PUBLIC FACILITIES IN THE STUDY AREA

Facility Type	Facility Name	Location
Church	Bibleway Baptist Church	571 Colonial Trail E, Surry
Church	Ferguson Grove Baptist	1876 Moonlight Rd, Surry
Church	Kingdom Hall of Jehovah's Witnesses	486 Brownsview Lane, Surry
Church	Mt Nebo Baptist	5738 Colonial Trail E, Surry
Church	St Paul Holiness	8645 Rolfe Hwy, Surry
Church	Surry Baptist Church	76 Church St, Surry, VA
Church	Unity Tabernacle	2699 Golden Hill Rd, Surry
Fire	Volunteer Fire Company	45 School Street, Surry
Fire	Volunteer Fire Company	Rolfe Highway, Dendron
Government	Surry County Government	45 School Street, Surry
Government	Town of Dendron Government	2855 Rolfe Hwy, Dendron
Library	Blackwater Regional	11640 Rolfe Highway, Surry
Police	Sheriff's Office	45 School Street, Surry
Post Office	Dendron Post Office	2850 Rolfe Hwy, Dendron
Post Office	Elberon Post Office	6517 Rolfe Hwy, Elberon
Post Office	Spring Grove Post Office	17 Swanns Point Rd, Spring Grove
Post Office	Surry Post Office	91 Colonial Trail East, Surry
Rescue	Volunteer Rescue Squad	45 School Street, Surry
School	L.P. Jackson Middle	4255 New Design Rd, Dendron
School	Surry Elementary	1600 Hollybush Rd, Dendron
School	Surry High	1675 Hollybush Road, Dendron
School	Tidewater Academy (Lower School)*	4373 Rolfe Hwy, Dendron

* This school is planned to close and will be consolidated into one facility in Wakefield (Sussex County).
Source: Surry County Land Development Plan, Parsons Brinckerhoff.

Table 1-16
SOUTHAMPTON COUNTY INSTITUTIONAL AND PUBLIC FACILITIES IN THE STUDY AREA

Facility Type	Facility Name	Location
Church	Tabernacle of Praise Baptist	11516 Tucker Swamp Rd, Zuni
Church	Tucker Swamp Baptist	37527 Seacock Chapel Rd, Zuni
Church	New Branch Baptist Church	8140 Proctors Bridge Road, Ivor
Church	Pentecostal Holiness Church	Proctors Bridge Road, Ivor

Facility Type	Facility Name	Location
Church	Ivor Baptist Church	8506 Bell Avenue, Ivor
Church	Gilfield Baptist Church	9390 Doles Road, Ivor
Fire	Ivor Volunteer	8273 Main Street, Ivor
Municipal	Municipal Building	8430 Bell Road, Ivor
Post Office	Ivor Post Office	8280 Main St, Ivor
Rescue	Ivor Volunteer	35476 General Mahone Boulevard, Ivor
State Government	VA Department of Agricultural and Consumer Services Ivor Laboratory	34591 General Mahone Boulevard, Ivor

Source: Southampton County Department of Planning, US Postal Service, Virginia Department of Agricultural and Consumer Services, Parsons Brinckerhoff.

1.1.7.5 Isle of Wight County

Table 1-17 lists the public facilities in the Isle of Wight County portion of the study area. Churches make up a large portion of the facilities in the County. A majority of facilities are clustered in the Town of Windsor, Isle of Wight, and the portion of the Town of Smithfield within the study area. Some portions of the County have Ivor postal addresses due to their proximity to Southampton County.

Table 1-17
ISLE OF WIGHT COUNTY INSTITUTIONAL AND PUBLIC FACILITIES IN THE STUDY AREA

Facility Type	Facility Name	Location
Church	Antioch	17 Roberts Ave, Windsor
Church	Ash Grove Baptist	23011 Antioch Rd, Windsor
Church	Bethany	5358 Zuni Cir, Zuni
Church	Bethany United Methodist	318 Main St, Smithfield
Church	Brown's A M E	616 Main St, Smithfield
Church	Calvary Baptist	15155 Turner Dr, Smithfield
Church	Cathedral of Life United Holiness	15088 Mt Holly Cr Ln, Smithfield
Church	Central Hill	10322 Central Hill Rd, Windsor
Church	Christ Episcopal	111 S Church St, Smithfield
Church	Emmanuel Baptist	11150 Emmanuel Ch Rd, Smithfield
Church	Great Spring Church of the Nazarene	13390 Great Springs Rd, Smithfield
Church	Hill St Church of God & Christ	110 Hill St, Smithfield
Church	Holly Grove AME	21404 Orbit Road, Windsor
Church	Jones Grove Baptist	15090 Woodland Dr, Windsor
Church	Kingdom Hall of Jehovah's Witnesses	23486 Deer Path Trail, Windsor
Church	Little Zion Baptist	16295 Cypress Way, Smithfield
Church	Marantha Bible Church	Deer Path Trail, Windsor
Church	Mill Swamp	6329 Mill Swamp Rd, Ivor
Church	Morningstar Baptist	8445 W Blackwater Rd, Windsor
Church	Mt. Olive Holiness	17136 Mount Olive Ave, Windsor
Church	Mt. Sinai Baptist	14165 Racetrack Rd, Ivor
Church	Mt. Tabor Church of God in Christ	13468 Waterworks Rd, Smithfield
Church	New Bethany Christian Church	15496 Benns Ch Blvd, Smithfield
Church	New Jones Grove Baptist	Woodland Drive, Windsor
Church	New Macedonia Church of God & Christ	123 Maple Lane, Windsor
Church	Pine Grove Assembly of God	10001 Fire Tower Rd, Windsor

Facility Type	Facility Name	Location
Church	Saint Paul Church of America	Thomas Woods Trail, Zuni
Church	Sandy Mount Baptist	16091 Scotts Factory Rd, Smithfield
Church	Shiloh Baptist	14165 Racetrack Rd, Ivor
Church	Smithfield Assembly of God	1801 S Church St, Smithfield
Church	Smithfield Baptist	100 Wainwright Dr, Smithfield
Church	Trinity United	201 Cedar St, Smithfield
Church	Union Bethel AME	14080 Bethel Ch Ln, Smithfield
Church	Walnut Grove Baptist	Thomas Woods Trail, Zuni
Church	Whitehead's Grove Baptist	18344 Benns Ch Blvd, Smithfield
Church	Windsor Baptist	6 Church St, Windsor
Church	Windsor Christian	W Windsor Blvd, Windsor
Fire	Windsor Station	80 E Windsor Blvd, Windsor
Library	Blackwater Regional	18 Duke Street, Windsor
Police	Sheriff's Headquarters	Route 258, Isle of Wight
Post Office	Isle of Wight Post Office	17161 Courthouse Hwy, Isle Of Wight
Post Office	Windsor Post Office	4 E Windsor Blvd, Windsor
Post Office	Zuni Post Office	5375 Windsor Blvd, Zuni
School	Carrollton Middle	14440 New Towne Haven Ln, Carrollton
School	Smithfield High	14171 Turner Drive Smithfield
School	Smithfield Middle	800 Main Street, Smithfield
School	Windsor Elementary	20008 Courthouse Hwy, Windsor
School	Windsor Middle/High	23320 North Court St/ 24 Church St, Windsor
School (private)	Isle of Wight Academy	17111 Courthouse Hwy, Isle of Wight

Source: Isle of Wight County Comprehensive Plan, Alexandria Drafting Company, Parsons Brinckerhoff.

1.1.7.6 City of Suffolk

Table 1-18 lists the public facilities in the City of Suffolk portion of the study area. This small portion of the City has a high concentration of educational facilities. Two elementary, one middle, and a new high school (opened in Fall 2004) occupy this area. A private school, a vocational school (the Pruden Center), and a post-secondary school (the Hobbs-Suffolk campus of Paul D. Camp Community College) are located here. This is the only portion of the study area that has post-secondary educational facilities. Eight churches and one library are also located here. Because the study area boundary is a major highway (Godwin Boulevard—Route 10/32) many public facilities are along this highway. Some of the facilities are not in the study area because they are on the east side of Godwin Boulevard. Therefore, facilities such as the Obici Hospital are not in the study area, even though they serve it.

Table 1-18
CITY OF SUFFOLK INSTITUTIONAL AND PUBLIC FACILITIES IN THE STUDY AREA

Facility Type	Facility Name	Location
Church	Oakland Christian	5641 Godwin Boulevard
Church	Little Bethel Baptist	6533 Everets Road
Church	Community Baptist	3520 Pruden Boulevard
Church	Little Mount Zion Baptist	3288 Pruden Boulevard

Church	Open Door	816 Kings Fork Road
Church	Liberty Baptist	116 Romans Road
Church	Providence United Methodist Church	3105 Providence Road
College	Paul D. Camp Community College	271 Kenyon Road
Library	Chuckatuck Station	5881 Godwin Boulevard
Fire	Station #4	837 Lake Kilby Road
School	Mount Zion Elementary	3264 Pruden Boulevard
School	Oakland Elementary	5505 Godwin Boulevard
School	King's Fork Middle	350 King's Fork Road
School	King's Fork High	350 King's Fork Road
School	Pruden Center for Industry and Technology	4169 Pruden Boulevard
School	Nansemond-Suffolk Academy (private)	3373 Pruden Boulevard

Source: City of Suffolk, Virginia, 2018 Comprehensive Plan, Appendix A; Parsons Brinckerhoff.

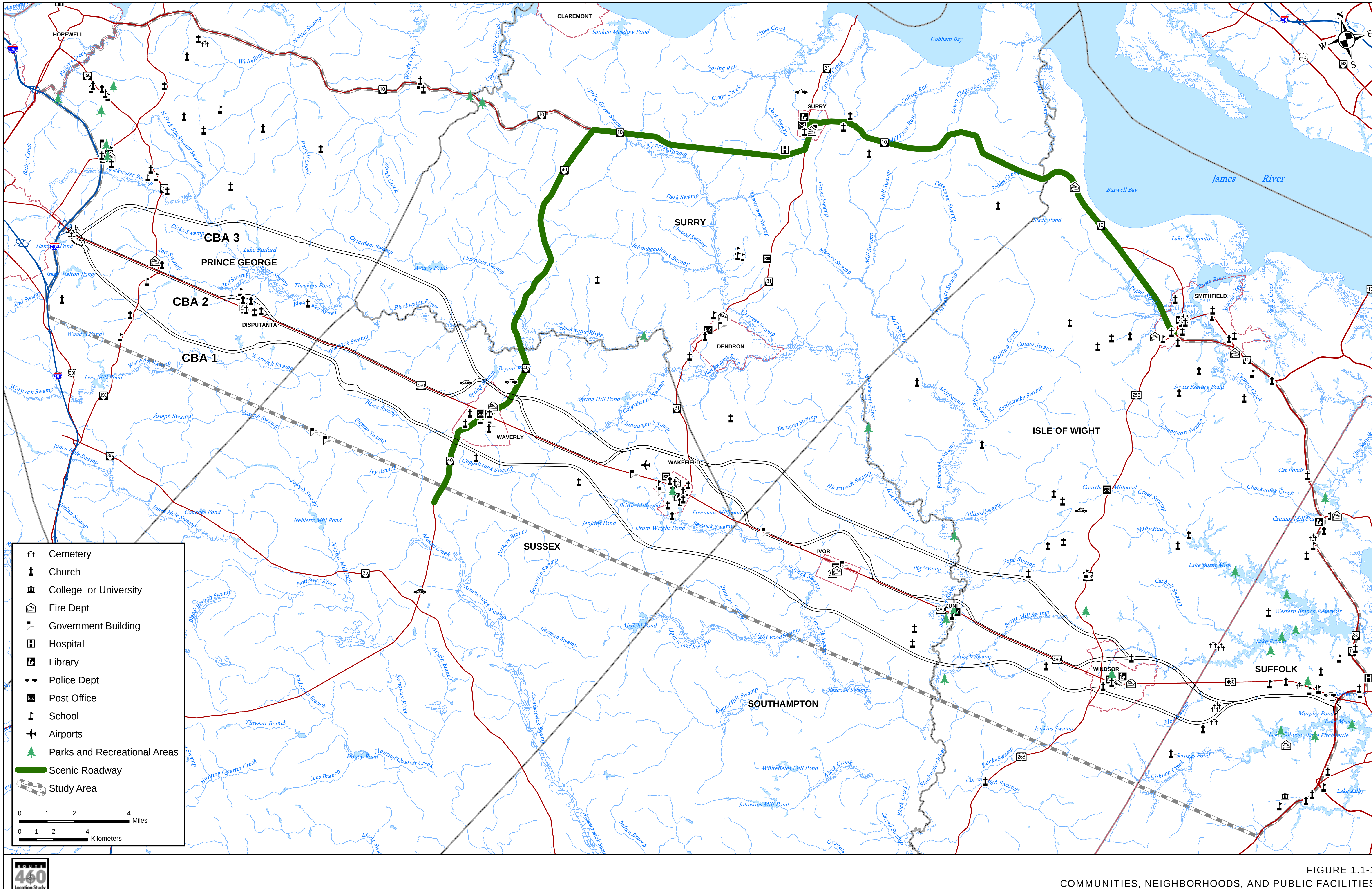


FIGURE 1.1-1
COMMUNITIES, NEIGHBORHOODS, AND PUBLIC FACILITIES

1.2 ECONOMIC ENVIRONMENT

1.2.1 Methodology and Assumptions

The economic environment for the Route 460 study area includes a baseline of present and/or planned conditions. Economic data from secondary sources was available at the city and county levels and the state-wide level was provided for comparison. Employment trends were provided by the U.S. Bureau of Economic Analysis (BEA) and reflect total full and part time employment from 1970 to 2000. Journey to work data, provided by the U.S. Census, indicate the level and location of commuter travel patterns. The local business environment and economic development plans were identified through a review of comprehensive plans, interviews with local planners, and field review. The number and types of businesses identified in each community are subject to change based on business openings and closings. The business environment presented in this document represents conditions as of July 2004 and are meant to provide a baseline for comparisons.

1.2.2 Employment Trends

Jurisdictional level data from the BEA provide a comparison between the Commonwealth of Virginia and the study area jurisdictions (Table 1-19). All of the study area jurisdictions have had slower employment growth rates than the Commonwealth in the past three decades.

Table 1-19
JURISDICTION EMPLOYMENT TRENDS

Employment Trends	1970	1980	1990	2000	Average Annual Compound Growth Rate 1970-2000	Total Percent Change 1970-2000	Total Employment Change 1970-2000
Virginia	2,157,657	2,801,662	3,726,176	4,407,324	2.3%	104.3%	2,249,667
Isle of Wight County	9,299	11,879	12,128	16,034	1.8%	72.4%	6,735
Prince George County[1]	26,075	28,133	27,701	28,901	0.3%	10.8%	2,826
Southampton County[2]	9,521	10,018	10,146	11,586	0.6%	21.7%	2,065
Surry County	3,662	3,073	3,193	2,604	-1.1%	-28.9%	(1,058)
Sussex County	4,129	3,385	3,846	4,886	0.5%	18.3%	757
City of Suffolk	18,050	19,689	20,639	26,007	1.2%	44.1%	7,957

[1] Prince George County totals include employment in Prince George County and the City of Hopewell

[2]Southampton County totals include employment in Southampton County and the City of Franklin

Source: U.S. Bureau of Economic Analysis, 2004

Between 30 and 45 percent of residents of the jurisdictions within the study area also work in the same county as they reside. As noted in Table 1-20, Prince George County and Sussex County had the lowest out-commuting ratio, while Surry County had the highest.

Table 1-20
JOURNEY TO WORK FOR STUDY AREA JURISDICTIONS

Residence County	Percent who Work within Residence County	Out-Commute Destination and Percent
Isle of Wight County	37%	• Newport News – 18% • Suffolk – 9% • Hampton – 8%
Prince George County	45%	• Chesterfield County – 11% • Petersburg – 10% • Hopewell – 9%
Southampton County	38%	• Franklin – 18% • Isle of Wight County– 17% • Greensville County – 4%
Surry County	30%	• Isle of Wight County – 13% • Newport News – 9% • Sussex County – 8%
Sussex County	44%	• Petersburg – 10% • Greensville County – 8% • Prince George County – 6%
City of Suffolk	40%	• Norfolk – 12% • Portsmouth – 12% • Chesapeake – 11%

Source: US Census Bureau, Census 2000 County-to-County Worker Flow Files

1.2.3 Local Business Environment

According to local comprehensive plans, the main industries within the study area relate to agricultural and silvacultural uses. The timber industry plays a particularly important role in the local economies in Surry, Sussex, and Southampton Counties. Almost 80% of Sussex County is forest, and 76% of those forest resources are owned by private companies and individuals. The majority of the farmlands produce soybeans, peanuts, and corn (for grain).

Because of Route 460's access, long-and short-haul distribution has been another recently expanding industry. Existing distribution centers include the Food Lion distribution center near Disputanta and the Cost Plus World Market facility located outside of the Town of Windsor. A variety of businesses are located along Route 460 and within the seven communities in the study area. These businesses provide services to local residents and through-traffic, employment opportunities for local residents, and tax revenues. Table 1-21 illustrates the sector breakdown and distribution of businesses in the communities along Route 460 based on field review. Of the communities along Route 460 within the study area, Waverly, Wakefield, and Windsor have the greatest number of businesses and provide the greatest number of jobs. Gas stations and restaurants serve both local and through-traffic, while retail and services tend to primarily serve local residents. Industrial businesses are primarily agricultural-related, processing peanut, pork, and wood products.

Table 1-21
COMPARATIVE BUSINESS ENVIRONMENTS WITHIN COMMUNITIES ALONG ROUTE 460

Location	Gas or Convenience Store	Restaurant (fast food/sit down)	Motel or Hotel	Other Retail	Services	Industrial
New Bohemia	⊙	⊙	○	⊙	○	⊙
Disputanta	○	○	○	⊙	⊙	○
Waverly	⊙	⊙	⊙	●	●	⊙
Wakefield	⊙	⊙	○	●	⊙	⊙
Ivor	⊙	⊙	○	⊙	⊙	⊙
Zuni	⊙	○	○	⊙	⊙	○
Windsor	⊙	⊙	○	●	●	⊙
Kings Fork	⊙	○	○	⊙	⊙	○

Where 0 businesses = ○, 1-5 businesses = ⊙, 5-10 business = ⊙, and 10+ businesses = ●
Source: Michael Baker, Jr., 2005

1.2.4 Economic and Investment Incentive Areas

Economic development is important to all study area jurisdictions. Many Virginia localities use enterprise zones as a means to promote economic development in designated areas. Enterprise zones provide a range of development incentives, including state and local tax credits. Prince George County has an enterprise zone on Route 460 near the Interstate 295/Route 460 intersection. Sussex County has applied to the Commonwealth's Department of Housing and Community Development to have its industrial park considered for Enterprise Zone status. The 2,000-acre park, located north of the town of Waverly, would continue the industrial orientation of Route 460 as it crosses from Prince George County into Sussex. Water and sewer lines have been installed in the area with a water booster pump station to serve businesses located along Route 460. Another Enterprise Zone is along 460 between Interstate 295 and Disputanta in Prince George County. This Enterprise Zone offers several incentives, such as business machine grants, business license fee rebate, and waivers for utility connection and rezoning.

Other jurisdictions, such as Isle of Wight and Surry Counties, do not have enterprise zones but do have industrial parks within the study area. Isle of Wight County has expanded its Shirley T. Holland Industrial Park located just east of the Town of Windsor along Route 460. The park is zoned for light industry and commercial use and contains 100 acres of flat terrain. The expanded park contains an additional 350 acres. The county's economic development staff is committed to directing development to designated areas along transportation corridors while preserving rural open space. The City of Suffolk also has an economic development department that has attracted light industry to areas of northern Suffolk (outside of the study area) with good transportation access--most noticeably the areas near Interstate 664. Suffolk industrial parks have attracted large companies such as QVC, Lipton, Planters, Sara Lee, and most recently, a 1.5 million square foot distribution center for Target Stores. Finally, Surry County has also developed two industrial parks around the Town of Surry. In the spring of 2004, the County government announced the arrival of Windsor Mill, a manufacturer of specialty lumber, to its Surry Industrial Park.

1.3 TRAVEL PATTERNS AND ACCESSIBILITY

1.3.1 Methodology and Assumptions

Information regarding local travel patterns and accessibility was provided during the public involvement process. Additionally, local representatives were asked about local bicycle and pedestrian travel patterns

and potential transit options. General information regarding travel patterns was gathered from the 2000 Census journey to work data and an Origin–Destination survey for this study.

1.3.2 Local Travel Patterns and Non-Motorized Travel

Travel patterns along Route 460 in the study area consist of both through trips and local trips. The private vehicle is the dominant form of travel as no public transportation is available along Route 460 within the study area. Additionally, no bicycle/pedestrian trails are located within the study area. Based on 2000 Census data, between 85 - 95 percent of workers 16 years or older rely on a car, truck, or van as a means of transportation to work. Workers in Prince George County had the highest rate of walking to work at 9 percent, while 2 percent or less of workers in the other localities cited walking as their means of transportation to work. In addition to personal vehicle trips, Route 460 serves as the main east-west route in the study area for emergency service responders, postal mail carriers, delivery vehicles, and school busses. Mail carrier and school bus routes require frequent stops along Route 460.

Residents attending the two public meetings in August 2003 were surveyed for local travel patterns. Based upon the analysis of survey respondents, Route 460 is clearly an important transportation facility for the study area. The majority of survey respondents (58 percent) used Route 460 everyday. Eight-six (86) percent of respondents use Route 460 at least once per week. The majority of respondents (70 percent) travel greater than eleven miles one-way on average trips along Route 460. Nineteen percent travel greater than 30 miles one way. Only seven percent of respondents indicated one-way travel distances of less than five miles.

Trip purposes mentioned by survey respondents covered every major category including: commuting to work (50 percent); shopping (38 percent); shipping goods (13 percent); and school trips (9 percent). Additionally, numerous “other” responses were given including dining/entertainment; visiting friends and family; and attending meetings and church. Several respondents indicated that every trip they make uses Route 460 because their driveway is located along the roadway.

At one point, most of the communities in the study area were served by both rail (Norfolk Southern) and passenger bus service (Trailways and Greyhound). Although these services were used by local residents, rail service was discontinued in the 1970’s and bus service in the 1980’s. The Crater Planning District Commission (PDC) has identified the need for a local bus/van route along Route 460 between Petersburg and Wakefield.

Interviews with local representatives noted that some residents, specifically children, walked or bicycled within the communities in the study area. Specific examples of non-motorized travel conditions noted by local representatives included:

- Sidewalks and other pedestrian facilities are needed in portions of Sussex County (specifically, in the Towns of Waverly and Wakefield).
- In Waverly, many adults walk and bike because they do not have access to a private vehicle.
- In Wakefield, children walk and bike between their homes and the ballfield.
- In Surry County, it is difficult to get around without a car.
- Windsor has sidewalks within its old corporate limits and is looking to extend them along North Court Street to facilitate connections to the middle school.
- Cyclists use roads throughout the study area for recreational riding.

1.3.3 Through Trip Travel Patterns

Through trip travel was analyzed via an Origin–Destination (OD) survey conducted at two locations along the corridor in May 2003. (Refer to the Route 460 Location Study Traffic, Transportation, and Freight Technical Report for details).

At the Prince George County survey location, the majority of eastbound trips (80 percent) originated in the Richmond – Petersburg Metropolitan Statistical Area. The majority of eastbound trips (60 percent) were

destined for communities along Route 460 within the study area. An additional 15 percent of trips originated in other parts of Virginia, including southwestern, central, and northern Virginia. Five percent of these eastbound trips along Route 460 originated in other states.

At the Suffolk survey location, the majority (91 percent) of westbound trips originated in Hampton Roads. The majority of eastbound trips (75 percent) were destined for communities along Route 460 within the study area. An additional 15 percent of westbound trips were destined for the Petersburg -Richmond MSA. Over 7 percent of westbound trips were destined for others parts of Virginia and approximately 3 percent of eastbound trips were destined for outside of Virginia.

1.3.4 Freight Traffic

Route 460 is an important shipping route and, therefore, carries a large amount of truck traffic. Truck volumes currently range from approximately 2,600 to 4,100 trucks per day, correlating to between 18 and 34 percent of total vehicular traffic. By comparison, the national average truck composition for rural arterial highways is 10 percent (FHWA, 1996). As a consequence of the increasing truck traffic on Route 460, and along with geometric deficiencies, operational problems have been identified by both car and freight drivers on Route 460 during the public involvement process.

1.4 BENEFIT-COST ANALYSIS

A Benefit-Cost Analysis (BCA) measures the direct benefits and costs that a project causes or creates for highway agencies, travelers (users), and, to some non-users affected by the project. Direct benefits and costs are the impacts of the transportation project on users and non-users, and include changes in travel time, crashes, vehicle operating costs, agency construction costs, and pollution costs. The BCA does not measure or determine indirect impacts on the economy, such as changes in employment, wages, business sales, or land values or use. These broader indirect impacts are addressed in the Indirect Effects and Cumulative Impacts section of the *Route 460 Location Study* (located in section 4.19 of the DEIS) and in the *Route 460 Location Study Indirect Effects and Cumulative Impacts Technical Report.*

A BCA helps to determine which alternative should be considered. However, a BCA only examines the economic feasibility of the project and does not include financial feasibility analysis.

1.4.1 Methodology

Benefit-Cost methodology used in this location study is consistent with the methodology recommended and accepted by various government agencies, including the FHWA. The methodology is based on the 1977 AASHTO “Manual on User Benefit Analysis of Highway and Bus-Transit Improvements”, also known as the “1977 Redbook”. A computer software application known as MicroBENCOST developed by the Texas Transportation Institute based on the 1977 Redbook, was used in this process.

MicroBENCOST estimates the benefit by comparing the continuing cost of an existing facility to the cost of a proposed facility. The software program reports costs “before” and “after” improvements on both base case and proposed facilities. Then it calculates the savings/ benefits by comparing the “before” and “after” costs. In addition, the model the program generates also calculates summary of benefits, costs, and measures of economic feasibility. The benefits of the proposed facility are compared to the No-Build Alternative.

Benefits in this analysis are savings measured in dollars as a result of reductions in travel-time, vehicle operating costs, and accidents. These are briefly described as follows:

- Travel Time Savings: An estimate of the value of time is based on the purpose of travel and location (including origin and destination) and the magnitude of savings. For example, an hour of business travel is valued higher than non-business travel; the value of an hour of time is higher in urban areas than in rural locations; the value of freight (trucks) is higher than autos. MicroBENCOST considers any time saving a benefit.

- Passenger and commercial vehicles: For the purpose of this analysis two values of travel time were used; autos and commercial vehicles. Based on the recommendation of the U.S. Department of Transportation (USDOT) (Feb 23, 2003 memorandum) a composite value of $15.00 and $19.91 were used for auto and commercial vehicles respectively. The model calculates the amount of time saved by people using the new facility. This time saving is then multiplied by the value of time.
- Vehicle Operating Cost Savings: The model calculates the cost of operating a vehicle. The various vehicle operating cost components and maintenance cost is dependent on the highway facility (i.e. surface condition, vertical and horizontal alignment, and traffic conditions). Average vehicle operating cost per mile ranges between $0.30 and $0.40 for autos and between $0.50 and $1.75 for commercial vehicles. The MicroBENCOST documentation has a detailed cost breakdown by operating cost categories and vehicle types.
- Accident Cost Savings: In order to quantify economic benefit, the model estimates the number of accidents that could be prevented by the new highway and multiplies it by a dollar value assigned to the type of accident. USDOT, FHWA, and the National Transportation Institute (NTI) recommends using $2.7 million to $3.0 million for reducing each fatal accident. A value of $3.0 million savings per fatal accident was used in this analysis. Similarly, a value of $24,800 and $2,100 was used for injury and property damage only accidents respectively.

The following are costs associated with Route 460. The two major cost components used in the analysis were the initial capital cost (e.g. construction) and the increase in periodic maintenance and rehabilitation costs. These are described as follows:

- Construction Cost: One of the major capital costs is the construction of the new facility. Cost of construction is estimated in constant dollars (excludes the impact of inflation).
- Maintenance and Rehabilitation Cost: Any facility, old or new, has to be maintained. These are real costs and they depend on the traffic volume, age and condition of the facility. The analysis used the model's default values in estimating the maintenance and rehabilitation costs.
- carbon-monoxide emissions
- impact of induced traffic
- Other variables, including periodic rehabilitation costs, salvage value, and other user costs (vehicle operating, travel-time, accident) are included as benefits.

Two indicators are calculated to gauge the feasibility of the project; net present value and the benefit-to-cost ratio. These terms are discussed as follows:

- Net present value (NPV): The purchasing power of a dollar today is not the same as the purchasing power of a dollar in the future. Therefore, streams of future benefit and cost assumptions, over the life of the project, are discounted to the present value or base year. The present values of costs are subtracted from the present value of benefits, resulting in the NPV. A positive NPV indicates that pursuing the project at this time makes good economic sense.
- Benefit-to-Cost ratio (BCR): The BCR ratio is calculated by dividing the present value of benefits by the present value of costs. If the ratio is greater than 1.0, the project yields *more benefit than cost. Therefore, the project is worth pursuing on the grounds of economic sense*.

Although NPV and BCR are used in this project, other measures could also be used to evaluate the economic feasibility of a project. For example the uniform equivalent annual approach converts the NPV into equal annual amounts. The internal rate of return (IRR) estimates the discount rate at which the NPV is equal to zero.

1.4.2 Project Staging and Sequencing

Large transportation projects take years to be completed and open to traffic. It is also possible that major sections of this project will be open at different times. Construction sequencing has an impact on the construction cost, traffic volume estimates and related benefits and costs. For comparative purposes, it is assumed that the facility is completed with an operation date of 2005 and the benefits start accruing the following year for the next thirty (30) years.

This assumption is generally accepted practice and is based on sound economic principles for the level of comparison required at this phase of the location study. This assumption has the following benefits:

- relieving the user from having to estimate future inflation to escalate construction cost.
- elimination of making decisions as to the construction sequencing and timing of various sections of the project.
- elimination of the need to plan and predict the incremental development as a result of newly opened sections. This includes population, employment, and other socio-economic data forecast for trip generation models.
- time savings because traffic forecast for multiple years are not required.

2.0 ENVIRONMENTAL CONSEQUENCES

This chapter addresses potential social and economic consequences of the No-Build, TSM, and Candidate Build Alternatives (CBAs). Section 3.0 proposes measures to mitigate these impacts. For the CBAs, impact areas were determined based on two corridor widths:

- 500-foot wide "Planning Corridor" and
- Narrower "Design Corridor", estimated from the typical roadway section and proposed construction limits.

The Design Corridor is 230 feet wide for CBAs 1, 3, and the sections of CBA 2 on new location. For sections of CBA 2 along the existing Route 460 alignment, the proposed Design Corridor is 140 feet wide. Both corridor widths increase at proposed interchanges (CBAs 1, 2, and 3) and at-grade intersections (CBA 2) to provide necessary access to cross streets and highways.

Impact analyses relied on methods and assumptions detailed at the beginning of each of the following sections. For resources that involve direct, quantitative measurements, impact estimates are provided for both the Planning Corridor and the Design Corridor. The greater width of the Planning Corridor provides flexibility to further reduce or avoid impacts during final design. The impacts identified for the Design Corridor provide a more realistic example of the anticipated project impacts for each CBA. No distinction is made between the Planning and Design Corridors for resource impacts that are stated qualitatively or when there is not a difference between the impacts.

This section of the technical report addresses direct social and economic impacts including displacements, community impacts, impacts to environmental justice populations, and economic impacts. Indirect and cumulative social and economic impacts are summarized briefly in this technical report and addressed in detail in the *Indirect and Cumulative Technical Report* and Chapter 4 of the DEIS. Where applicable, CBA impacts were disaggregated to illustrate impacts at the county or city level or to a specific community or neighborhood in the study area.

2.1 DISPLACEMENTS

2.1.1 Methodology and Assumptions

Displacements were determined based on GIS analysis of Planning and Design Corridor footprint impacts on aerial photography. A displacement was determined to occur when the primary structure or structures (i.e., house, business, farm, or non-profit organization) was within the right-of-way (ROW) of the Planning or Design Corridor or access to the parcel was removed and cannot be restored. A detailed breakdown of displacement impacts per CBA for each locality is provided in the *Route 460 ROW Cost Technical Report*.

All property owners would be compensated for the fair market value of the land and any structures acquired by the proposed project. Additionally, any individual, family, business, farm, or non- profit organization displaced as a result of the acquisition of real property is eligible to receive reimbursement for the fair market value of property acquired, as well as moving costs. This process is known as relocation assistance. In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended, 1987), displaced property owners would be provided relocation assistance advisory services together with the assurance of the availability of decent, safe, and sanitary housing. Relocation resources would be made available to all displacees without discrimination.

Due to the preliminary nature of the study, individual households, businesses, farms, and non-profit organizations were not contacted regarding potential displacements; therefore, it was not feasible to

determine the specific relocation needs of each potential displacement. Secondary data sources and interviews with local officials were used, however, to identify general characteristics of the displaced residents, businesses, farms, and non-profit organizations to better address potential relocation needs. For residential displacements, these characteristics include ownership status, income, minority, and age and were estimated by assuming the characteristics of the 2000 Census block or block group within which the displaced parcel falls. For businesses, the name of the establishment and the estimated number of employees were determined during field review and from analysis of 2003 ES-202 data obtained from the Virginia Employment Commission (VEC). Project staff met with local representatives to determine if the business, farm, or non-profit facility was minority-owned/operated or primarily comprised of minority members.

As discussed above, all displacees would be provided relocation assistance in the form of financial compensation and professional consultation with VDOT ROW staff. The relocation assistance process does not require that a displacee relocate in a certain area or to a specific structure; because displaced residents, businesses, farms, and non-profit organizations may choose where they would like to relocate. They may choose to relocate and remain within their existing community or they may choose to move to a different community. However, community cohesion impacts are generally minimized when displaced residents, businesses, farms, and non-profit organizations choose to relocate and remain within their existing communities.

Four listing services (Realtor.com and the local real estate classified ads in the Virginia Pilot, Suffolk News Herald, and Progress-Index (Petersburg) newspapers) were reviewed for potential relocation options. Realtor.com is the official site of the National Association of Realtors. It is a national search engine of residential and commercial properties posted by licensed realtors as part of their multi-list service (MLS). The local real estate classified ads included properties for sale by realtors in addition to properties for sale by owner. All four listing services were reviewed to determine the availability of decent, safe, and sanitary replacement housing throughout the study area. The characteristics of housing posted for sale on these listing services were compared to the needs of households and individuals potentially displaced by the alternatives. Characteristics include price relative to income levels, size, occupancy status, and any special needs associated with age or disability.

To determine the potential for relocation options within each community, zip code based searches were completed of the four listing services. Seven zip codes correspond to the study area and provide a more localized focus on residential relocation options compared to a county-wide search. Since these listing services provide a snapshot of available housing and cost at one point in time, this search was completed twice during the study process to ensure a representative sample. 2000 Census data also provided historic availability of housing for sale by both owner and realtor within zip codes. In addition to these listing services, local planners and economic development representatives identified additional relocation options for displaced residents, businesses, farms, and nonprofit organizations, which included unadvertised properties for sale by owner, new construction, and the option to relocate/rebuild on the remainder of their parcel.

2.1.2 No-Build and TSM Alternatives

The No-Build Alternative and TSM Alternative would not displace any residents, businesses, farms, or non-profit organizations.

2.1.3 CBAs

Table 2-1 presents the number of households, businesses, farms, and non-profit organizations that would be displaced under each CBA. The width of the Design Corridor allows for the minimization of displacement impacts to residents, businesses, farms, and non-profit organizations when compared to the Planning Corridor. CBA 2 would displace the greatest number of households (187 Planning Corridor / 58 Design Corridor). CBA 3 would displace the fewest households, with only 51 in the Planning Corridor and 32 within the Design Corridor.

CBA 3 would not displace any businesses, while CBA 2 would displace the greatest number of businesses (31 Planning Corridor / 16 Design Corridor). CBA 1 would have the least displacement impact to farms (6 Planning Corridor / 0 Design Corridor), while CBA 3 would displace the greatest number of farms (9 Planning Corridor / 6 Design Corridor). Specific business displacements are discussed in Section 2.4 and listed in Table 2-9. CBA 2 would displace seven non-profit organizations in the Planning Corridor and four in the Design Corridor, while CBA 1 and 3 would each displace a single non-profit organization. The impact of displacing non-profit organizations is discussed in Section 2.2.

Figure 2.1-1 and Figure 2.1-2 show potential residential displacements for each CBA by locality. Most of the residential displacements for CBA 1 would occur in Isle of Wight, Prince George, and Sussex Counties. CBA 2 in the Planning Corridor would result in a higher percentage of displacements in Isle of Wight, Prince George, and Southampton Counties, while in the Design Corridor these displacements would be more focused in Isle of Wight County. CBA 3 in the Planning Corridor and Design Corridor would result in a higher percentage of displacements in Isle of Wight and Prince George Counties. A discussion of the impact of residential and non-profit displacements on communities is presented in the next section.

Table 2-1
DISPLACEMENTS BY CBA

Alternative	Number of Households Displaced		Number of Businesses Displaced		Number of Farms Displaced		Number of Non-Profit Organizations Displaced	
	Planning Corridor	Design Corridor	Planning Corridor	Design Corridor	Planning Corridor	Design Corridor	Planning Corridor	Design Corridor
CBA 1	89	53	5	1	6	0	1	1
CBA 2	187	58	31	16	7	5	7	4
CBA 3	51	32	0	0	9	6	1	1

Source: Michael Baker, Jr. February 2005

Per FHWA guidance found in Technical Advisory 6640.8A, household characteristics of residential displacements were estimated. As discussed in the previous section, characteristics of residential displacements were estimated by assuming the characteristics of the 2000 Census block or block group within which the displaced parcel falls. The characteristics presented in Table 2-2 include number of displaced households and the estimated owner/renter status. The three CBAs would displace a similar proportion of owner-occupied and renter-occupied households, with CBA 3 having the greatest percentage of owner occupied units (84 percent Planning Corridor / 81 percent Design Corridor). CBA 2 displaces the greatest number and percent of renter occupied households with both the Planning and Design Corridors. Median household income of displaced households per county ranged from $30,000 to $52,000 in CBAs 1 and 2 and $28,000 to $47,000 in CBA 3.

Table 2-3 identifies the estimated number and percent of elderly residents, minority residents, and low-income residents displaced by the CBAs. CBA 2 would displace the highest percentage of elderly and minority residents, whereas CBA 3 would displace the lowest percentage. All three CBAs would displace a similar proportion of low-income residents. A detailed discussion of impacts to minority and low-income populations is found in Section 2.3.

Figure 2.1-1
DISTRIBUTION OF RESIDENTIAL DISPLACEMENTS BY PLANNING CORRIDOR

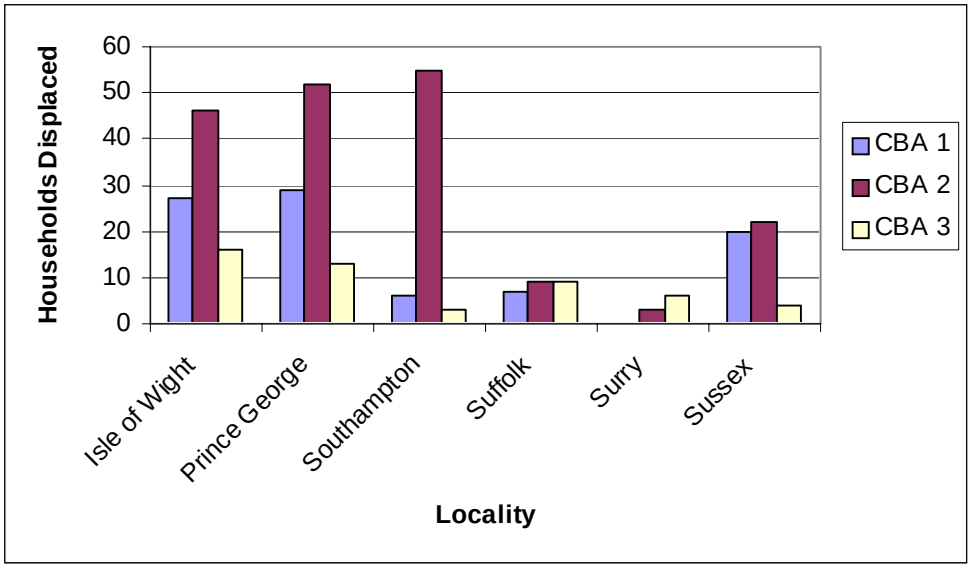


Figure 2.1-2
DISTRIBUTION OF RESIDENTIAL DISPLACEMENTS BY DESIGN CORRIDOR

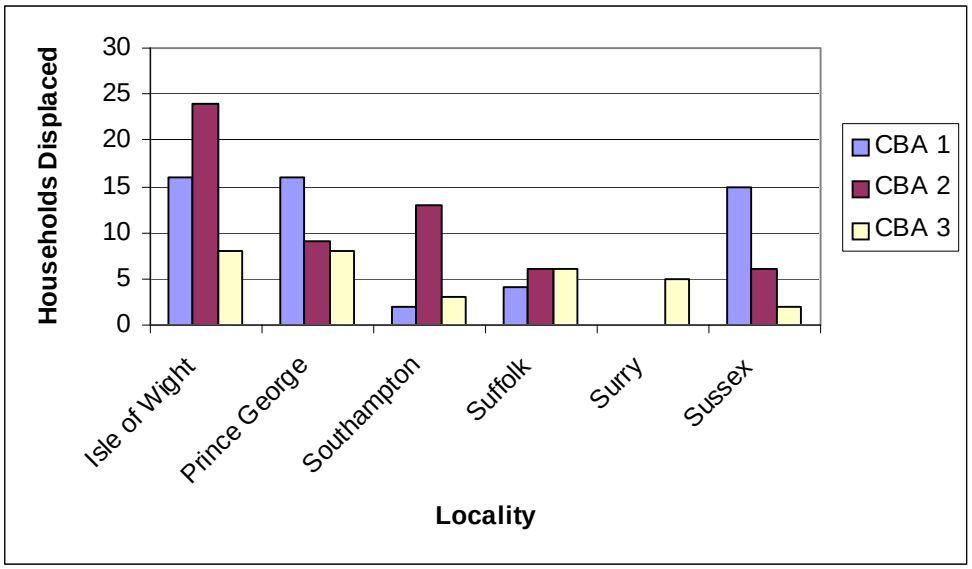


Table 2-2
HOUSEHOLD OCCUPANCY STATUS OF RESIDENTIAL DISPLACEMENTS

Build Alternative		Household Displacements				
		Total #	Owner Occupied		Renter Occupied	
			#	%	#	%
CBA 1	Planning Corridor	89	75	84%	14	16%
	Design Corridor	53	45	85%	8	15%
CBA 2	Planning Corridor	187	147	79%	40	21%
	Design Corridor	58	47	81%	11	19%
CBA 3	Planning Corridor	51	43	84%	8	16%
	Design Corridor	32	26	81%	6	19%

Source: 2000 Census, Michael Baker Jr.

Table 2-3
CHARACTERISTICS OF DISPLACED RESIDENTS

Build Alternative		Characteristics of Displaced Residents						
		Total #	Elderly		Minority		Low-Income	
			#	%	#	%	#	%
CBA 1	Planning Corridor	220	28	13%	76	35%	20	9%
	Design Corridor	130	18	14%	50	38%	13	10%
CBA 2	Planning Corridor	464	83	18%	244	53%	47	10%
	Design Corridor	136	31	23%	65	48%	13	10%
CBA 3	Planning Corridor	132	17	13%	36	27%	13	10%
	Design Corridor	85	11	13%	25	29%	9	11%

Source: 2000 Census, Michael Baker Jr.

The characteristics identified in the previous tables were used to identify relocation needs. Displaced property owners would be provided relocation assistance advisory services together with the assurance of the availability of decent, safe, and sanitary housing. Implementation of the acquisition and relocation program developed by VDOT would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended, 1987). Relocation resources would be made available to all displacees without discrimination. A detailed description of relocation options is provided in the *Right of Way and Cost Technical Report*. A summary of the available replacement housing and specific relocation concerns follows.

Design Corridor options were able to minimize displacements to a level that can be met by current supply based on a review of comparable housing in classified advertisements of three local newspapers (Virginian Pilot, Suffolk News Herald, and Petersburg's Progress-Index), a MLS search of Realtor.com, and 2000 Census data. To determine the availability of suitable relocation opportunities for residential displacements within each community, a local real estate review was conducted at a zip code level of geography (Table 2-4 and Figure 2.1-3). Table 2-5 provides the supply of replacement housing within the seven zip code areas assessed. This analysis concludes that of the communities with displacements, Ivor, Zuni, and Windsor have the least amount of available replacement housing compared to the number of displacements. For residents displaced in these communities, VDOT may have difficulty finding replacement housing in the same community. In some cases, remaining in the same community might require building a new home.

In addition to relocation housing identified on the listing service searches, some residents may have the option to relocate/rebuild on the remainder of their parcel. This option would be on a case-by-case basis and is determined by parcel size and local land use regulations. Representatives of Prince George County indicated that this would provide additional relocation options, especially for low to moderate-income level households.

As noted by local representatives, housing costs are rising throughout the study area. Homes listed for sale in the Waverly, Wakefield, and Ivor zip codes provided the most affordable housing options. Average home prices ranged from $113,000 – $150,000 in these three zip codes. Comparatively, the average price in the other four zip codes was over $197,000. Relocation options for low and moderate-income level households would be more limited in these areas due to rising housing costs.

VDOT guarantees that no displaced persons would be required to move until a comparable replacement dwelling is made available within their financial means. If comparable housing is not available, or existing housing does not meet special needs, or the cost exceeds the benefit limit, VDOT is authorized to take a broad range of measures to make housing available. Between 8 percent and 11 percent of the residents displaced by the CBAs are considered low-income and would likely require additional measures to provide decent, safe, and sanitary replacement housing. These measures, which are beyond the normal relocation measures, are collectively called last resort housing. Housing of last resort may include restoration of a rehabilitated dwelling, construction of an addition to a relocated dwelling, purchase of land and construction of a new replacement dwelling, a replacement housing payment in excess of the price differential, or a direct loan that would enable the displaced person to construct or contract the construction of a replacement dwelling.

Displacement impacts and relocation options for businesses, farms, and non-profit organizations are discussed in further detail in Sections 2.2 and 2.4. Field review and discussions with local representatives suggest that adequate relocation options are available in each community for displaced businesses and non-profits. Based on the size of agricultural operations in the study area, most displaced farms will be able to relocate their farm structure on their existing property. The *Land Use, Parklands, and Farmlands Technical Report* and Chapter 4 of the DEIS provide additional details regarding measures to minimize impacts to existing farming operations.

Table 2-4:
RESIDENTIAL DISPLACEMENTS BY ZIP CODE

Zip Code	Post Office Name	CBA 1		CBA 2		CBA 3	
		Planning Corridor	Design Corridor	Planning Corridor	Design Corridor	Planning Corridor	Design Corridor
23842	Disputanta	29	16	57	9	13	8
23890	Waverly	17	13	7	3	1	1
23888	Wakefield	3	2	22	4	9	6
23866	Ivor	2	0	46	12	3	3
23898	Zuni	29	16	14	5	5	2
23487	Windsor	2	2	32	19	11	6
23434	Suffolk	7	4	9	6	9	6
Totals		89	53	187	58	51	32

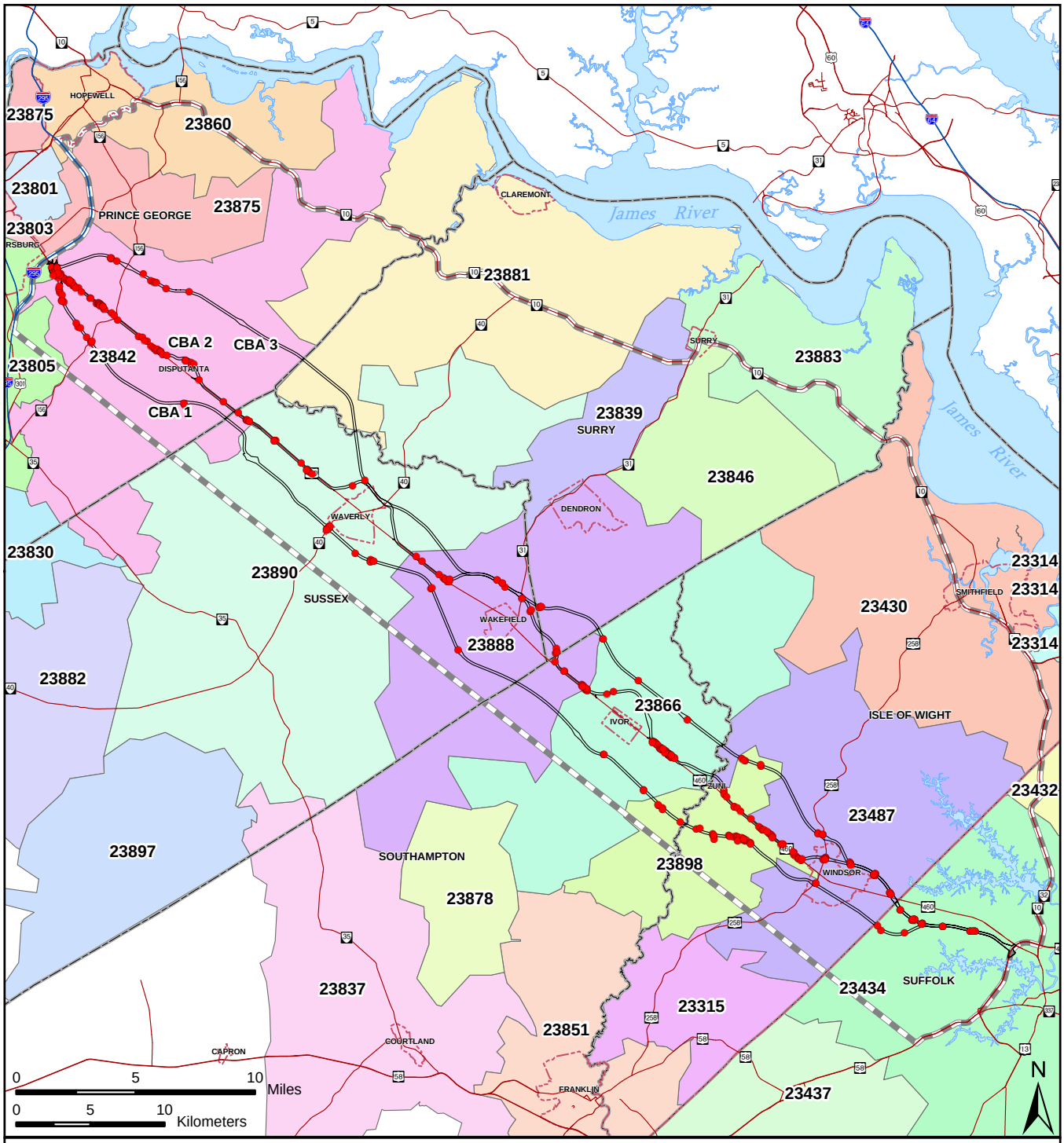
Source: Michael Baker, Jr., February 2005

Table 2-5:
RESIDENTIAL RELOCATION OPTIONS BY ZIP CODE

Residential Relocation Options by Zip Code							
Zip Code	Post Office Name	Realtor.com		Virginian Pilot[1]		2000 Census	
		Total Homes for Sale		Total Homes for Sale		For Sale	For Rent
		5/28/04	1/14/05	5/28/04	1/14/05		
23842	Disputanta	35	31	-	-	10	12
23890	Waverly	10	3	-	-	20	25
23888	Wakefield	3	0	5	2	20	16
23866	Ivor	1	0	8	3	7	11
23898	Zuni	0	4	5	7	5	13
23487	Windsor	1	1	2	1	24	57
23434	Suffolk	23	40	-	-	200	357
Totals		73	79	20	13	286	491

As discussed in Section 2.1.1, classified adds from three local newspapers (Virginia Pilot, Suffolk News Herald, and Petersburg's Progress-Index) were reviewed for replacement housing. Findings from the Virginia Pilot are included in this table because the adds could be searched by zip code.

Source: Michael Baker, Jr., February 2005



- CBA Displacements
- Study Area

FIGURE 2.1-3
DISPLACEMENTS BY ZIP CODE

2.2 SOCIAL CONSEQUENCES

2.2.1 Methodology and Assumptions

Direct social impacts can affect levels of social interaction and stability in communities and neighborhoods. This analysis focuses on direct impacts of the CBAs on communities and neighborhoods including: displacements, change in visual quality, noise impacts, and changes in travel patterns and accessibility.

When impacts are localized in a specific neighborhood within a community, two levels of community cohesion were assessed, at the neighborhood level and the community level. Neighborhoods are smaller than a community and generally include subdivisions, manufactured home parks, or clustered rural residential development. Neighborhoods are located within and near these seven communities, as well as in the more rural portions of the study area.

Evaluation methods to identify potential changes to social interaction and stability included site analysis, mapping overlays, field review, as well as first-hand information provided during public involvement and information gathering meetings. In project-specific GIS, the displacement of residential, commercial, and non-profit facilities was displayed relative to the communities as a whole. This format allowed for an assessment of the potential magnitude of change in community cohesion while providing a summary of the potential benefits and adverse impacts to residents within the study area. The following factors were used to determine direct community impacts that may affect community cohesion:

- Displacements: A GIS-based analysis was completed to identify where the alternatives displaced residents, businesses, and community facilities within each community / neighborhood. The effects of their potential removal from the community were also addressed.
- Visual quality: A visual impact assessment was conducted to establish the existing visual environment of the area and assess the potential impacts to the area's visual resources. The visual context of each resource was determined and served to established whether the resource was considered visually unique, distinctive, common, or intrusive. Visual resources were grouped into seven different resource types: agricultural, commercial, community, cultural, natural, and recreational. The potential impact of the proposed CBAs on these visual resources were considered to have one of three impacts: no impact; an impact but not an adverse; or an adverse impact. Visual impacts are described in Chapter 4.4 of the *Route 460 Location Study Draft Environmental Impact Statement (DEIS)*.
- Noise Impacts: The number of residences, churches, or schools with potential noise impacts within a community or neighborhood was identified for each CBA. As documented in the *Noise Analysis Technical Report*, the potential noise impacts of the CBAs were assessed in accordance with FHWA and VDOT guidelines. To determine the degree of impact of highway traffic noise on human activity, the Noise Abatement Criteria (NAC) established by the FHWA regulation have been used. Per FHWA, noise impact occurs when the predicted noise levels in the project area "approach or exceed" the NAC during the loudest hour of the day. Noise impact also occurs when predicted noise levels substantially exceed existing noise levels. An increase of 10 decibels or more is considered a Substantial Increase by VDOT.
- Travel patterns and accessibility: In general, accessibility and mobility measure the relative ease with which desired destinations can be reached. GIS analysis was used to evaluate the spatial relationship of access for basic services for residents within the study area based on access changes. These impacts are discussed as a function of travel times/distances and placement of interchange/intersection ramps. Types of mobility assessed include vehicular (private and commercial), school buses, pedestrian, and bicycle.

2.2.2 No-Build and TSM Alternative Impacts

The No-Build and TSM Alternatives would not result in any displacements or visual impacts. Approximately 20 residences would experience noise impacts under the No-Build Alternative along Route 406, due to the increasing traffic volumes.

Currently, Route 460 bisects the communities of Disputanta, Waverly, Wakefield, Ivor, Zuni, and Kings Fork. Current traffic levels and lack of consistent roadway shoulder limit bicycle and pedestrian mobility along Route 460 in each community.

By the year 2026, average daily traffic volumes for the No-Build and TSM Alternatives are projected to increase between 34 and 70 percent over existing volumes. The national average for truck traffic on rural arterial highways is 10 percent (FHWA, 1996). In contrast, the percentage of truck traffic on Route 460 ranges from 18 to 30 percent under existing conditions and will increase to a range of 30 to 37 percent in 2026 with the No Build and TSM Alternatives. Due to the high percent of truck traffic, high travel speeds, and a lack of protected turning movements, residents have noted throughout the public involvement process their concerns with regard to safety when crossing or turning on Route 460. Local services such as emergency service response, mail delivery, and school bus routes are also sensitive to these increases in traffic and truck volumes. The deterioration in local accessibility resulting from traffic conditions would further exacerbate the physical bisection of existing Route 460 on each of the communities. Compared to the No-Build Alternative, the TSM Alternative will provide modest safety improvements for travelers along Route 460. Details on improvements associated with the TSM Alternative are discussed in Chapter 2 of the DEIS, and in the Alternatives Development Technical Report.

2.2.3 CBA Impacts

A summary of social impacts to the communities along Route 460 and neighborhoods within the study area is presented in Table 2-6 through Table 2-8. As noted in these tables, each CBA would result in displacements. Residents, businesses, and non-profit organizations may choose to relocate within their current community or may leave the community entirely. The degree to which residents, businesses, and non-profit organizations choose to relocate within the same community will influence the level of community disruption. The Design Corridor of each CBA would allow for the reduction of many of the community impacts associated with displacements.

CBA 2 would displace the greatest number of non-profit organizations. These displacements in the Planning Corridor of CBA 2 include: Sacred Heart Catholic Church, American Legion, Disputanta Ruritan Club, Windsor Convenience Center (recycling), Marantha Bible Church, and three small family cemeteries. The displacements in the Design Corridor include the American Legion, Windsor Convenience Center, and two small family cemeteries. CBA 1 and 3 each displace one non-profit organization, Shilo Holiness Church and Marantha Bible Church, respectively.

During coordination with representatives of Prince George and Sussex Counties, it was noted that CBAs 1 and 3 would potentially travel through planned and approved subdivision areas. As these subdivisions are not currently developed, their planned layout could potentially be adjusted should either of these CBAs be selected.

The CBAs would not result in adverse visual impacts to any of the communities along Route 460. A discussion of visual impacts is presented in Section 4.4 of the DEIS. The number of noise impacts to homes within specific communities and neighborhoods varies according to location. Details regarding noise impacts are found in the Noise Analysis Technical Report. The construction of noise barriers has been considered at every location where a noise impact has been predicted. Noise barriers will minimize noise impacts to communities and neighborhoods. FHWA and VDOT require that noise barriers be both “feasible” and “reasonable” to be recommended for construction. The feasibility of constructing noise barriers will be fully evaluated for those properties impacted by the preferred alternative during the analysis for the FEIS.

Residents, businesses, and emergency response services would benefit from an additional hurricane evacuation route provided under either CBA 1 or 3. CBA 1 or 3 would provide an improved, safer, and faster hurricane evacuation route than currently exists on Route 460. Improved drainage design features and current roadway design standards would prevent roadway flooding that typically happens in the low-lying areas through which existing Route 460 traverses. While CBA 2 would provide travel time savings for hurricane evacuation, it would not provide an alternative and additional evacuation route for the region.

Residents and businesses would benefit from improved travel time savings associated with all three CBAs. Travel time savings are discussed in Section 5.4.2 of the *Indirect and Cumulative Technical Report.* Residents near planned interchange areas would benefit from decreased travel times to employment centers in Petersburg and Suffolk. Residents and local representatives have expressed concern about the impact of the potential loss of traffic for local highway and tourist-related businesses located within the communities. These impacts are summarized in Section 2.4.3 and discussed in detail in the *Indirect and Cumulative Technical Report* (Section 8.5.2: Economic Sustainability of Towns (Bypass Effects)).

Traffic volumes would be greatly reduced from existing Route 460 in each of the communities, ranging from 50 to 90 percent, depending on the CBA and the location. The percentage of truck traffic on Route 460 in the center of bypassed communities would be between 7 and 9 percent of total traffic volumes compared to 30 to 37 percent under the No-Build and TSM Alternatives. Given that the national average for truck traffic on similar rural arterials is 10 percent, these truck volumes would be more in keeping with the national average. The lower traffic volumes on Route 460 would directly benefit local services that travel daily along Route 460 such as emergency response services (police, fire, medical), school buses, and mail delivery.

The CBAs would have a similar effect on local accessibility and mobility. The reduction in automobile and truck traffic on Route 460 would make vehicular and non-motorized travel patterns safer within each community, and might result in more pedestrian/bicyclist crossings and interaction. The reduction in traffic levels and improved local accessibility would reduce the level of separation caused by Route 460 for the seven communities along the project corridor. Emergency response services would specifically benefit from improved local accessibility and mobility, potentially decreasing incident response times.

Interchange locations along secondary roadways will be grade separated, thus would not limit non-motorized travel along the existing secondary roads. However, the secondary roads with interchange locations would experience higher traffic levels than in the No-Build and TSM Alternatives. As discussed in Section 2.5.1, potential mitigation measures to minimize the impact of increased traffic on secondary roads near interchange ramp locations and may include the provision of sidewalks or other design features such as wide paved shoulders to improve safety conditions for pedestrians and bicyclists.

Table 2-6
SOCIAL CONSEQUENCES OF CBA 1

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
New Bohemia (Prince George) Figure 2.2-1	12 residences and 5 businesses (7 residences and 1 business)	Impact, not adverse	5	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route.
Farmington Estates (Prince George)	4 residences (1 residence)	--	6	No impact

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
Continental Forest (Prince George) Figure 2.2-2	3 residences (2 residences)	--	7	No impact
Charleston Estates (Prince George) Figure 2.2-2	No impact	--	11	Improved mobility for emergency vehicles due to direct interchange access. Direct access to additional hurricane evacuation route.
Disputanta (Prince George)	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides 18 minutes of travel time savings to Suffolk.
Waverly (Sussex) Figure 2.2-3	11 residences and Shilo Holiness Church	Impact, not adverse	4	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Non-motorized travel would be affected by increased traffic levels on Route 40 at the interchange ramp areas. Direct access to additional hurricane evacuation route. Provides 12 minutes of travel time savings to Suffolk.
Wakefield (Sussex)	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides six minutes of travel time savings to Petersburg and eight minutes to Suffolk.
Ivor (Southampton)	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides nine minutes of travel time savings to Petersburg and seven minutes to Suffolk.
Tucker Swamp Road (Rt. 635) (Southampton)	3 residences (1 residence)	--	6	No impact
Zuni (Isle of Wight)	No impact	No impact	0	Provides 11 minutes of travel time savings to Petersburg and five minutes to Suffolk.

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
Thomas Woods Trail (Rt. 614) (Isle of Wight)	4 residences (2 residences)	--	5	No impact
Mill Creek Drive/ Barrett Town (Rts. 638 and 641) (Isle of Wight)	20 residences (12 residences)	--	33	No impact
Windsor (Isle of Wight) Figure 2.2-6	2 residences	Impact, not adverse	12	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Non-motorized travel would be affected by increased traffic levels on Route 258 (Bank Street) at the interchange ramp areas. Direct access to additional hurricane evacuation route. Provides 15 minutes of travel time savings to Petersburg.
Kings Fork (Suffolk) Figure 2.2-7	3 residences (2 residences)	--	10	Provides 18 minutes of travel time savings to Petersburg.

Source: Parsons Brinkerhoff and Michael Baker Jr., 2005.
-- Visual impacts not determined at the neighborhood level.
*When different, displacements impacts are provided for both Planning Corridor and Design Corridor, with Design Corridor totals in parenthesis.
**Travel time savings are compared to 2026 No Build

Table 2-7
SOCIAL CONSEQUENCES OF CBA 2

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
New Bohemia (Prince George) Figure 2.2-1	14 residences, 14 businesses, Sacred Heart Church, and American Legion (2 residences, 4 businesses, and American Legion)	Impact, not adverse	0	No impact
Disputanta (Prince George)	4 residences	Impact, not adverse	3	Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides 11 minutes of travel time savings to Suffolk.

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
Waverly (Sussex)	No impact	Impact, not adverse	8	Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides 10 minutes of travel time savings to Suffolk.
Wakefield (Sussex) Figure 2.2-4	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Increased traffic through Mars Hill neighborhood on Rt. 31. Provides eight minutes of travel time savings to Suffolk.
Ivor (Southampton)	No impact	Impact, not adverse	0	Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides three minutes of travel time savings to Petersburg and six minutes to Suffolk.
Rts. 460 and 635 – east of Ivor (Southampton)	42 residences, 3 businesses (12 residences, 2 businesses)	--	5	Increased traffic on Route 460.
Zuni (Isle of Wight)	4 residences (3 residences)	Impact, not adverse	0	Improved mobility for emergency vehicles and non-motorized travel within community due to decreased traffic on Route 460. Provides four minutes of travel time savings to Petersburg and five minutes to Suffolk.
Windsor (Isle of Wight) Figure 2.2-5	8 residences	Impact, not adverse	34 total, 22 in Twin Ponds MHP	Provides four minutes of travel time savings to Petersburg and five minutes to Suffolk.
Kings Fork (Suffolk) Figure 2.2-7	3 residences (2 residences)	--	8	Provides nine minutes of travel time savings to Petersburg.

Source: Parsons Brinkerhoff and Michael Baker Jr., 2005.
-- Visual impacts not determined at the neighborhood level.
*When different, displacements impacts are provided for both Planning Corridor and Design Corridor, with Design Corridor totals in parenthesis.
**Travel time savings are compared to 2026 No Build

Table 2-8
SOCIAL CONSEQUENCES OF CBA 3

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
New Bohemia (Prince George)	2 residences	Impact, not adverse	5	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route.
Route 635 (Prince George)	6 residences (4 residences)	--	7	No impact
Disputanta (Prince George)	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides 18 minutes of travel time savings to Suffolk.
Waverly (Sussex)	No impact	Impact, not adverse	5	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides four minutes of travel time savings to Petersburg and 18 to Suffolk.
Wakefield (Sussex) Figure 2.2-4	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides seven minutes of travel time savings to Petersburg and ten minutes to Suffolk.
White Marsh Road (Rt. 617) (Surry)	6 residences (5 residences)	--	7	No impact
Ivor (Southampton)	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides eight minutes of travel time savings to Petersburg and seven minutes to Suffolk.
Tomlin Hill Drive and Dodge Lane (Isle of Wight)	3 residences (1 residence)	--	9	No impact
Zuni (Isle of Wight)	No impact	No impact	0	Improved mobility for emergency vehicles and non-motorized travel on Route 460, due to reduced traffic.

Community or Neighborhood	Total Number of Displacements*	Visual Impacts	Noise Impacts	Travel Patterns and Accessibility**
Clydsdale Mobile Home Park Figure 2.2-5	No impact	--	18	No impact
Windsor (Isle of Wight) Figure 2.2-5	No impact	Impact, not adverse	42 (Windsor Woods)	Improved mobility for emergency vehicles and non-motorized travel on Route 460. Direct access to additional hurricane evacuation route. Provides 14 minutes of travel time savings to Petersburg and five minutes to Suffolk.
Shilo Drive (Isle of Wight)	5 residences (2 residences)	--	9	No impact
Kings Fork (Suffolk) Figure 2.2-7	3 residences (2 residences)	--	9	Provides 18 minutes of travel time savings to Petersburg.

Source: Parsons Brinkerhoff and Michael Baker Jr., 2005.
-- Visual impacts not determined at the neighborhood level.
*When different, displacements impacts are provided for both Planning Corridor and Design Corridor, with Design Corridor totals in parenthesis.
**Travel time savings are compared to 2026 No Build

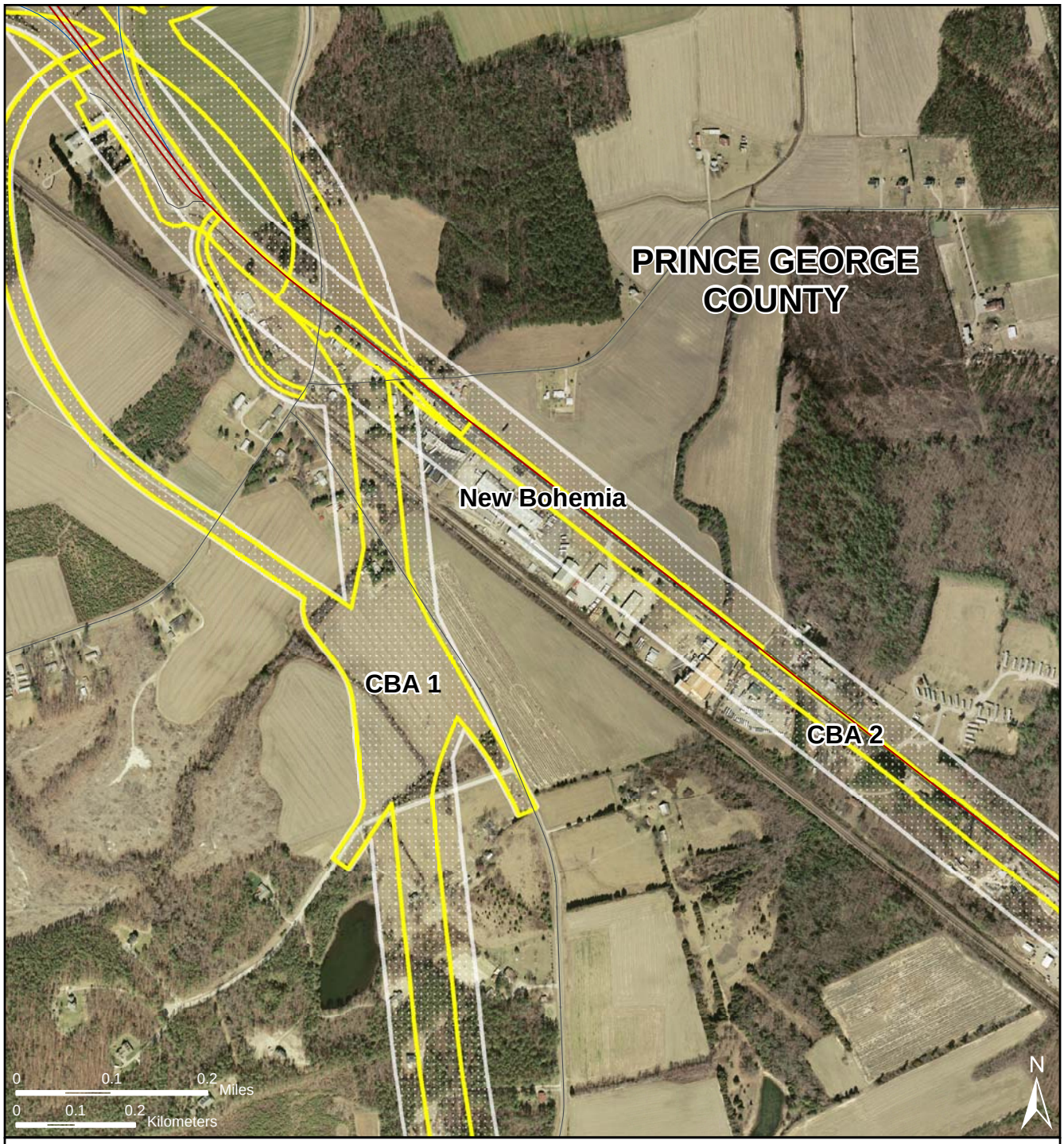


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FIGURE 2.2-1
NEW BOHEMIA

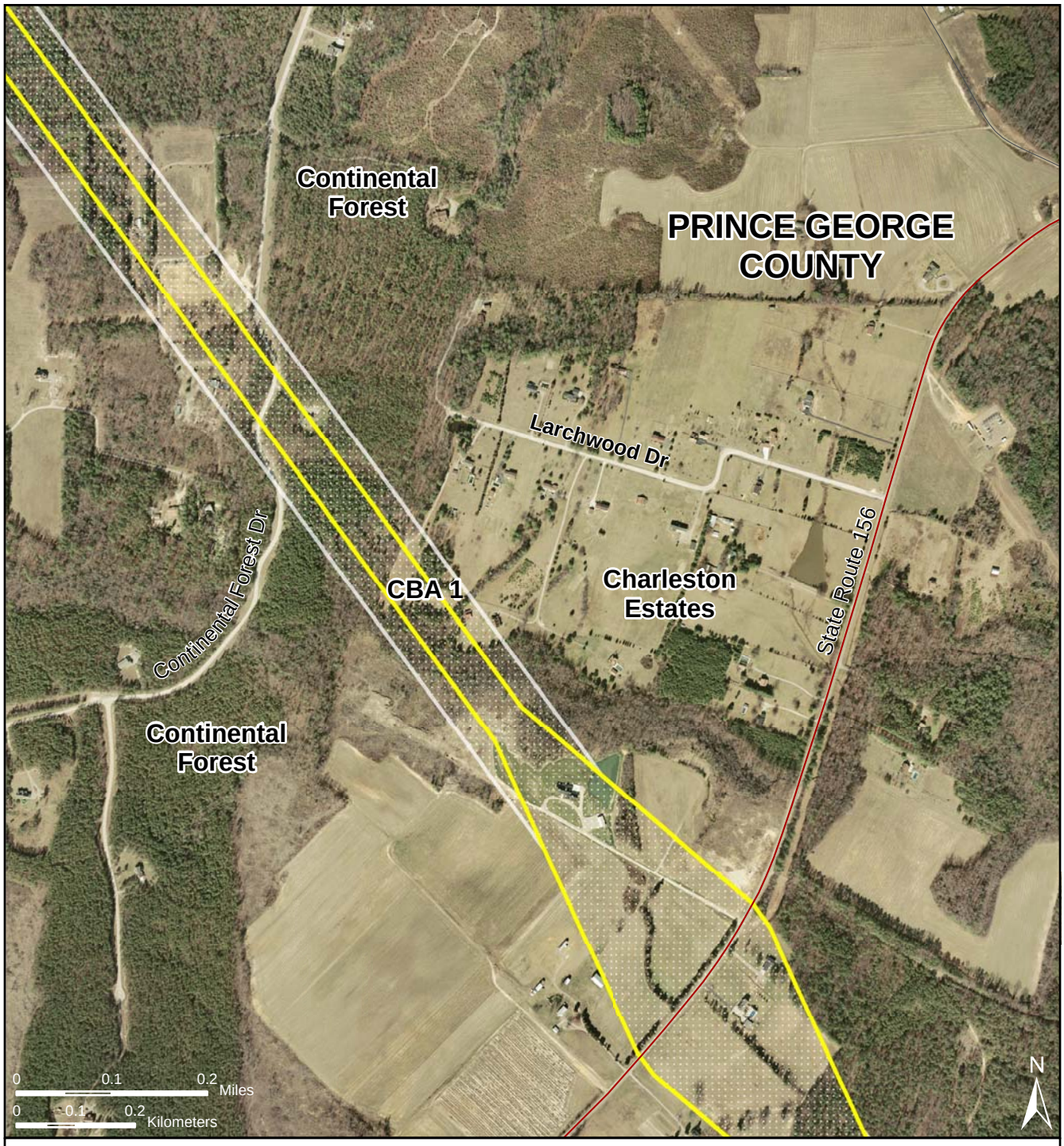

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FIGURE 2.2-2
CONTINENTAL FOREST / CHARLESTON ESTATES

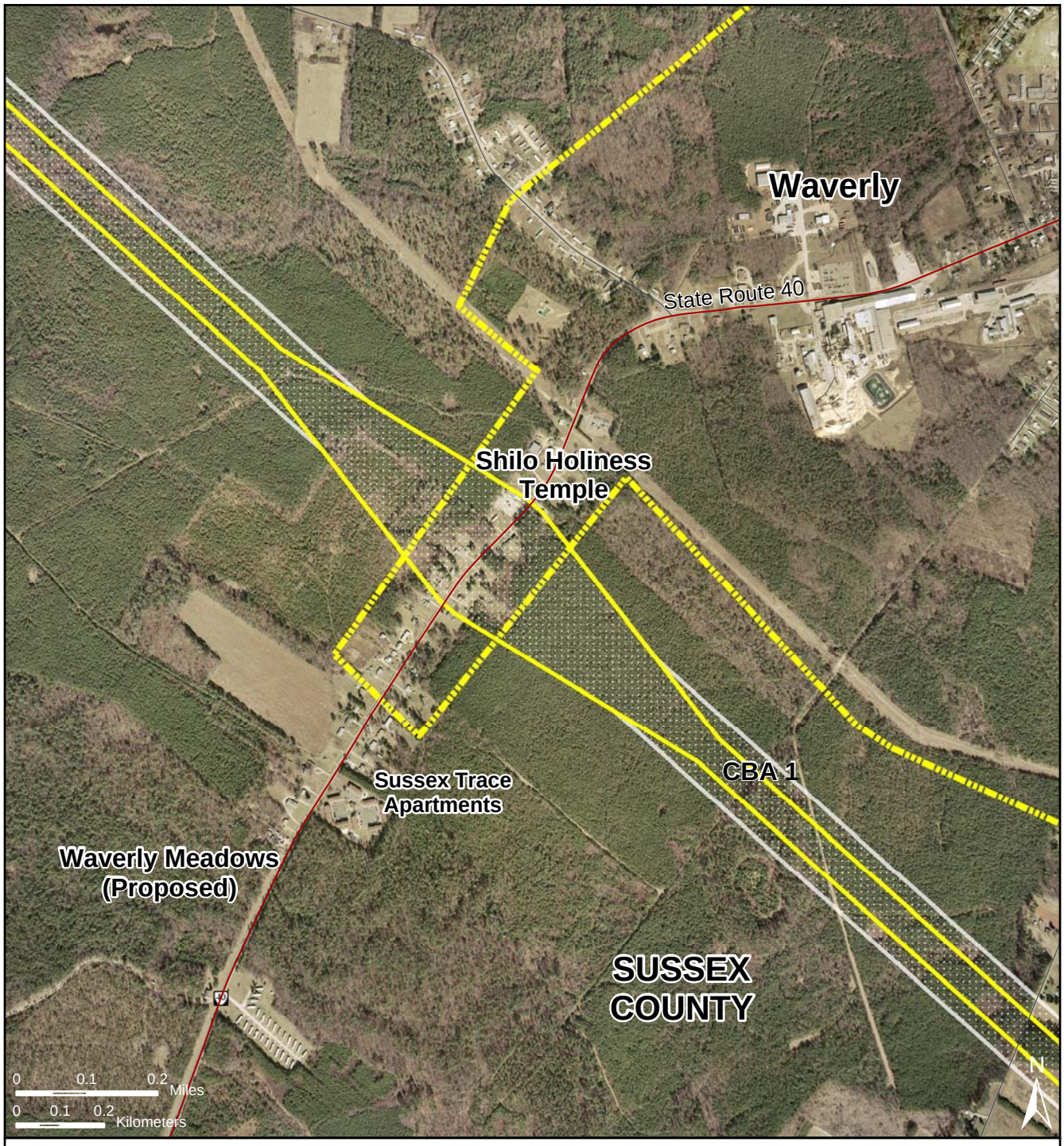

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FIGURE 2.2-3
WAVERLY - CBA 1

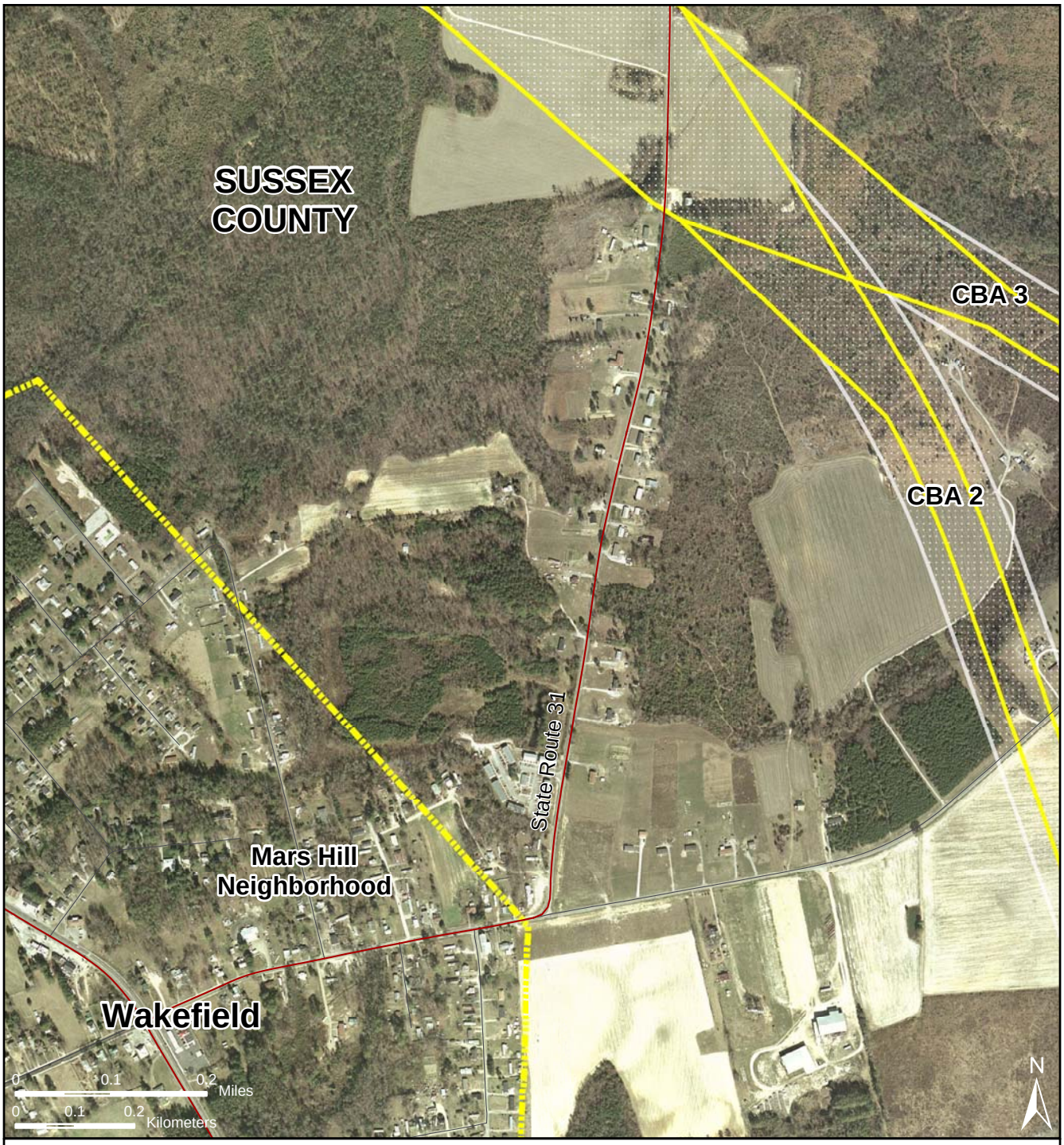

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FIGURE 2.2-4
WAKEFILED - CBAS 2 & 3

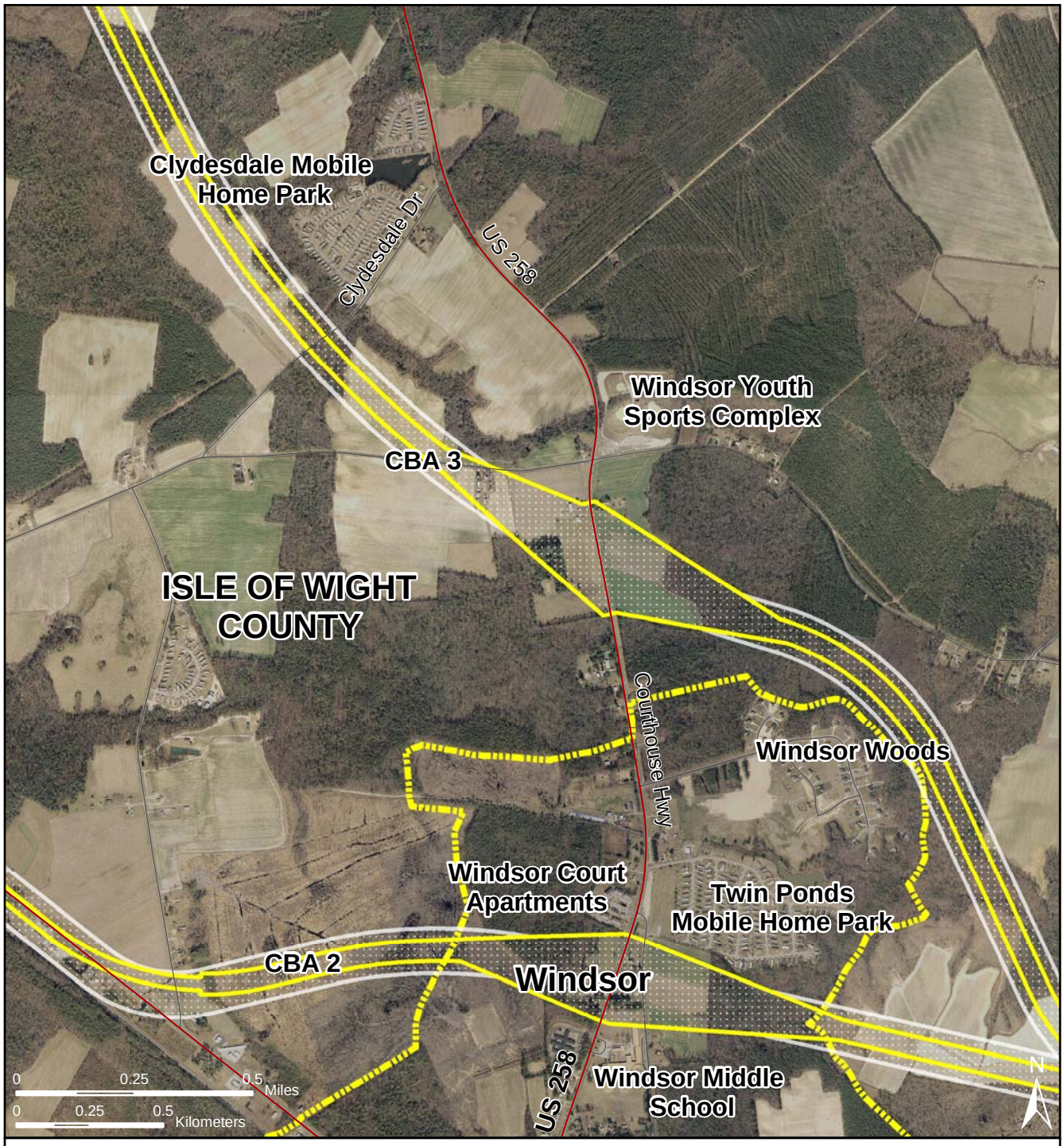

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FIGURE 2.2-5
WINDSOR - CBAS 2 & 3

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FIGURE 2.2-6
WINDSOR - CBA 1

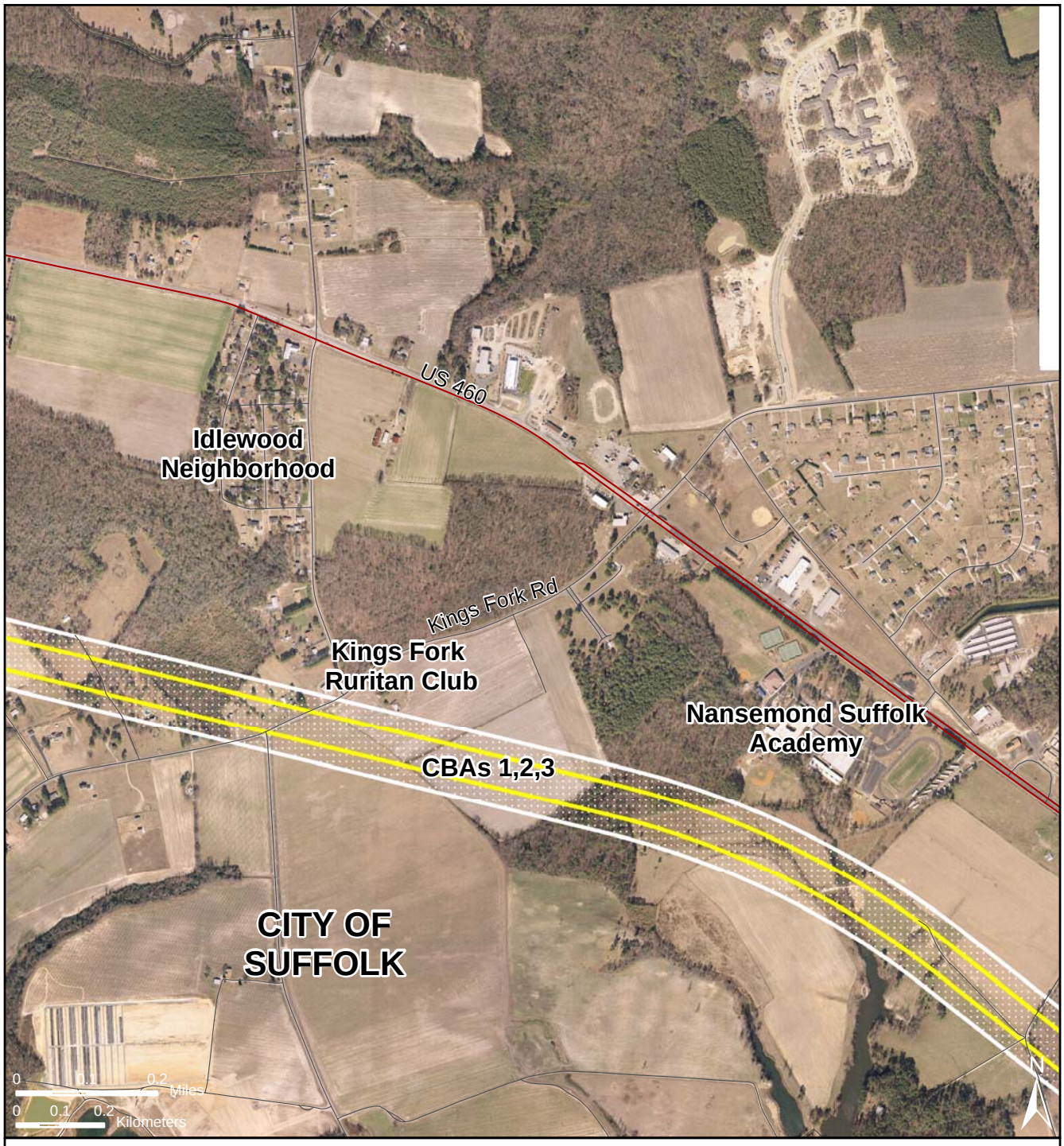

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FIGURE 2.2-7
KINGS FORK

2.3 ENVIRONMENTAL JUSTICE CONSEQUENCES

2.3.1 Methodology and Assumptions

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", seeks to minimize disproportionate impacts of federal programs on minority populations and low-income populations. The following steps were included in this study process to address potential environmental justice consequences:

- Make active efforts to identify minority and low-income populations and include them in the transportation planning process;
- Provide for their participation and community representation in the process;
- Consider all reasonably foreseeable direct, indirect, and cumulative effects on minority and low-income populations;
- Compare the impacts to minority and low income populations to those of non-minority and non-low-income populations to determine 1) whether minority and low-income populations share equally in the benefits of the transportation project, and 2) whether disproportionately high and adverse impacts to minority or low-income populations would occur with the transportation project; and
- To the extent practical, avoid, minimize, and mitigate adverse impacts to minority and low-income populations.

The environmental justice methodology relies upon a combination of U.S. Census data, input from citizens and local officials, and windshield surveys to identify the impacts as outlined above. Locations of environmental justice populations were identified early in the project development process to facilitate avoidance and minimization of adverse impacts.

2.3.1.1 Identification of Minority and Low-Income Populations

In December 1998, the FHWA published its "FHWA Actions To Address Environmental Justice In Minority Populations And Low-Income Populations." It defines minorities as Black, Hispanic, Asian American, American Indians, and Alaskan Natives. For this analysis, all persons other than White non-Hispanic were considered a minority. The FHWA defines low-income as "a person whose median household income is below the U.S. Department of Health and Human Services poverty guidelines". As discussed in Section 1.1.4, this analysis used the 2000 Census poverty status data to determine low-income populations. The 2000 Census data were used as an initial attempt to identify minority and low-income populations. These populations are presented in Table 1-4 and Table 1-6 and graphically illustrated in Figure 2.3-2 and Figure 2.3-3.

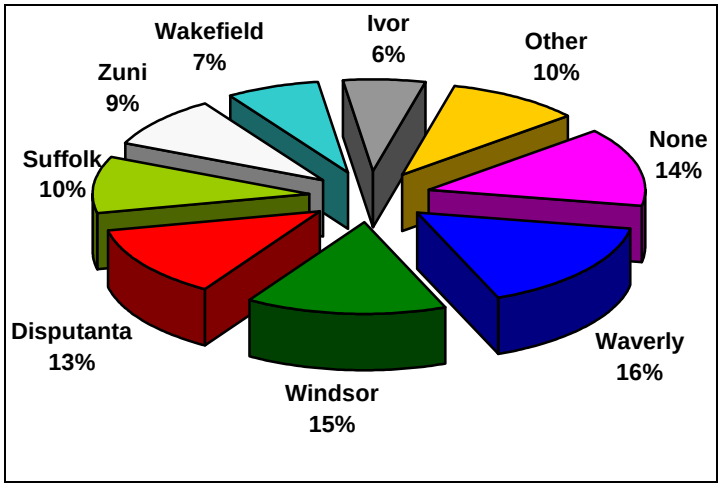
Coordination meetings were held in the summer of 2004 with representatives of the Prince George, Sussex, Surry, Southampton, and Isle of Wight Counties, the City of Suffolk, and the Towns of Waverly, Wakefield, and Windsor to discuss minority and low-income populations and potential impacts of the CBAs on these communities. Field review and public involvement meetings provided additional opportunities to identify the location and distribution of these populations.

As described in sections 1.1.3 and 1.1.4, along Route 460 in the study area, the highest concentrations of minority populations are found north and south of Route 460 in New Bohemia, east of Disputanta, south and west in Waverly, west and north of Wakefield, north and south of Ivor, and south of Route 460 in Zuni and Windsor. The highest concentrations of low-income populations are located north of Route 460 between New Bohemia and Disputanta, in southern Waverly, and northern Wakefield.

2.3.1.2 Provide Opportunities for Participation in the Transportation Planning Process

Multiple opportunities have been provided to encourage public involvement in the transportation planning process and to specifically provide meaningful coordination with minority and low-income populations. A summary of public outreach is found in Chapter 7 of the DEIS. To date, public outreach has included: public scoping meetings - August 2003, citizen information meetings – February 2004, 2 newsletters, and meetings held with stakeholder groups such as boards of supervisors and civic organizations. Efforts for outreach to specifically engage minority and low-income residents in the planning process included providing two meeting dates and locations for each set of meeting. For example, scoping and citizen information meetings were held at both the JEJ Moore Middle School near Disputanta and the Windsor High School in Windsor. These central locations and duplicate meetings offered citizens different locations and dates to review and provide information. Additionally, Windsor High School is located with in the Town of Windsor and within walking distance for many community residents. The February 2004 Citizen Information Meetings were well attended with 213 citizens in Windsor on February 24, 2004 and 165 citizens in Disputanta on February 26, 2004. Newsletters and a postcard were most effective in recruiting people to the Windsor meetings. Word of mouth was a larger source of information for Disputanta meeting participants. Figure 2.3-1 illustrates the residence of citizens providing written comments at the February 2004 meetings in Windsor and Disputanta. As noted in Table 1-6 and Table 1-9 and confirmed with discussions with local representatives, minority and low-income residents are members of the communities with residents attending the citizen information meetings. Additional opportunities for public involvement will be provided spring 2005 after the publication of the DEIS. Project team members will continue coordination with citizens and local representatives to incorporate minority and low-income populations in the planning process.

Figure 2.3-1
LOCATION OF RESIDENTS PROVIDING COMMENTS AT FEBRUARY 2004 MEETINGS



2.3.1.3 Impact analysis and determination of proportion of benefits and adverse impacts

Impact analysis for minority and low-income populations parallels the displacement and social impact methodology presented in Sections 2.1.1 and 2.2.1. Information obtained for the Right of Way Technical Report was used to determine impacts on minority and low-income residents and businesses. Contact was not made with local citizens to determine such factors as population per household, minority status,

owner/renter status, or income. The numbers of minority and low-income residents displaced were estimated based on 2000 Census data and confirmed by local representatives, outreach, and field review. A comparison by alternative was made to the total number of residents displaced to identify locations of higher concentrations of minority or low-income impacts. The severity of other social impacts to environmental justice populations such as noise and visual impacts and changes in accessibility and mobility was estimated by comparing the percent minority and low-income population potentially affected by each CBA to the minority and low-income population in their respective jurisdiction. The impacts, both positive and negative, to minority and low-income populations were then compared to the impacts to non-minority and non-low-income populations to determine if they share equally in the benefits or are burdened with disproportionately high and adverse impacts.

2.3.2 No-Build and TSM Alternatives

No direct effects on low-income or minority populations have been identified for the No-Build Alternative. The TSM Alternative would improve the safety of all travelers on Route 460, including low-income and minority residents of the area and through-travelers. This is a positive effect and would not disproportionately adversely affect either the low-income or minority concentrations or individuals in the study area. As discussed in 2.2.2, traffic volumes and the percentage of truck traffic will increase by the year 2026. This deterioration in local accessibility would further exacerbate the physical bisection of existing Route 460 on each of the seven communities, equally affecting minority and low-income populations and non-minority and non-low-income populations.

2.3.3 CBAs

Table 2-3 estimates the number of minority and low-income residents that would be displaced by each CBA. The characteristics of these residents were estimated based on information from the 2000 Census, which were confirmed with meetings with local planners and during field review. CBA 2 would displace the highest number of minority persons with 224 in the Planning Corridor and 65 in the Design Corridor. Similarly, CBA 2 at the Planning Corridor would result in the greatest number of low-income residents displaced with 47 residents. All three CBAs at the Design Corridor would displace a much lower number of low-income residents (between 9 and 14 residents). The Design Corridor is able to minimize impacts to all residents, including minority and low-income residents. In general, the severity of the displacements impacts to minority and low-income populations is proportional to the occurrence of these populations throughout the study area. Minority residents account for 27 percent to 38 percent of the total displacements with CBA 1 or 3, compared to the study area minority population of 37 percent. The minority residential displacements associated with CBA 2 (48 percent to 53 percent) exceed the study area's 37 percent minority population. The low-income displacements associated with CBAs 1, 2, and 3 (ranging from 9 percent to 11 percent) are comparable to the study area average of 9 percent.

The locations of the CBAs relative to environmental justice populations are illustrated in Figure 2.3-2 and Figure 2.3-3. Consideration of mitigation for noise impacts (e.g., noise barriers) would be provided without discrimination. Specific social impacts to minority and low-income populations according to CBA include benefits resulting from reduced travel times to employment centers. Additional benefits of all CBAs include a reduction of traffic on Route 460 within each community. This will benefit local traffic flow and safety, including emergency services response times, and encourage non-motorized travel. Additional employment opportunities anticipated with induced commercial development at some interchange locations and planned industrial developments would also benefit minority and low-income populations.

CBA 1 would have impacts on minority and low-income populations in Waverly and Windsor. In Waverly, CBA 1 in both the Planning and Design Corridors would displace 11 minority households and Shilo Holiness Temple, which serves minority community members. The access provided by the interchange ramps on Route 40 would increase traffic for remaining residents along Route 40 and Sussex Trace Apartments. As noted by local representatives, this community relies heavily on non-motorized transportation, so pedestrian safety features, such as sidewalks or wide paved shoulders, would be considered along Route 40 between the CBA interchange ramp locations to improve safety conditions for

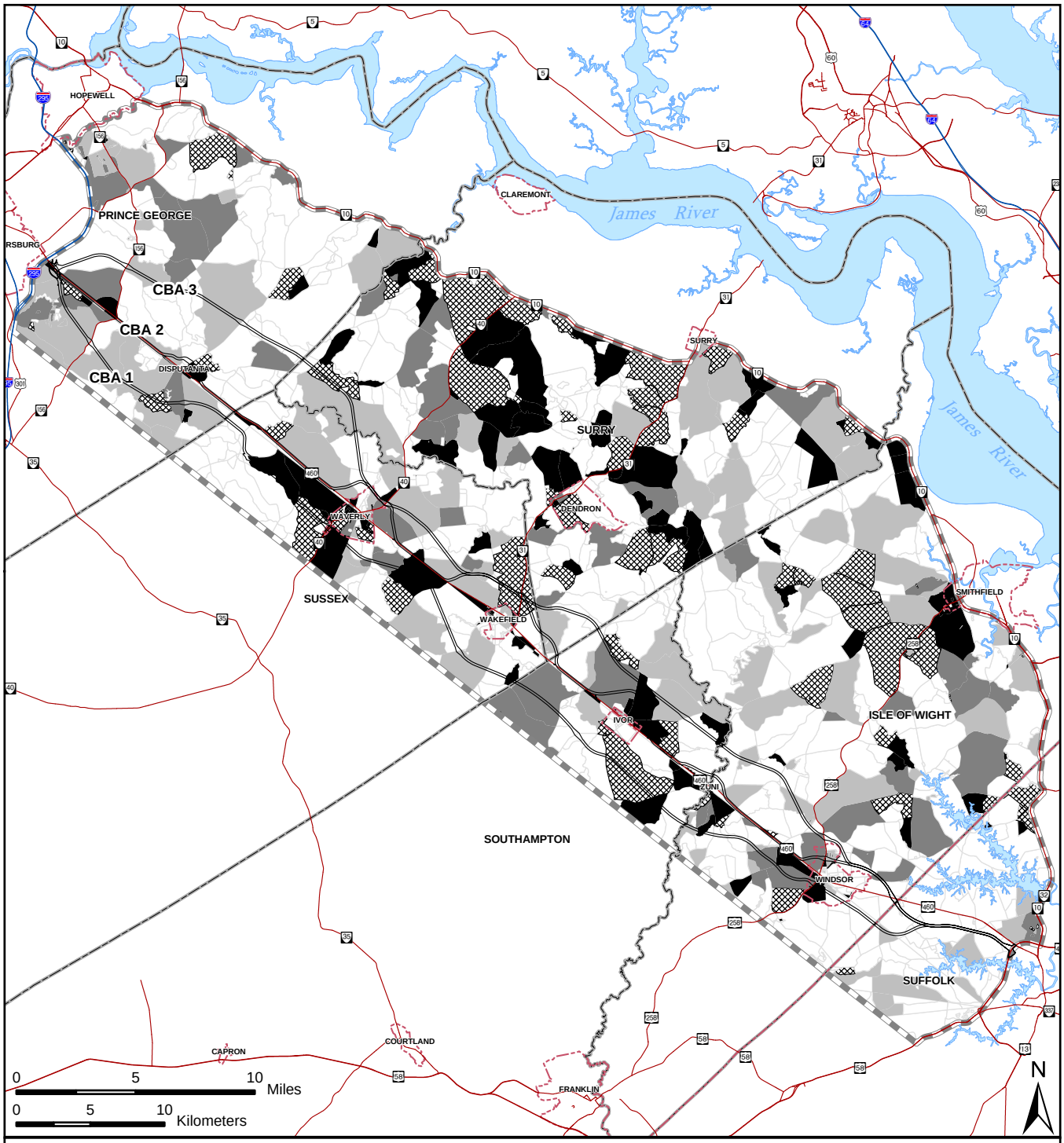
pedestrians and bicyclists. In Windsor, CBA 1 would provide interchange ramps on Bank Street (Route 258), displacing 2 households. This area along Bank Street (including Bear Trap Circle) was provided public water and sewer service with Community Block Development Grant funds in 1998.

CBA 2 would displace the American Legion and the Disputanta Ruritan Club. These clubs are predominantly comprised of minority members. It is likely that these community facilities will be able to relocate along Route 460 and continue serving minority residents in the New Bohemia and Disputanta communities. CBA 2 and 3 will alter traffic levels along Route 31 in the Mars Hill neighborhood. This neighborhood includes both minority and low-income populations. In Windsor, CBA 2 would provide interchange ramps on Route 258 between Twin Ponds MHP and Windsor Court Apartments and the Windsor Middle School. Pedestrian safety features, such as sidewalks or wide paved shoulders would be considered along Route 258 between CBA interchange ramp locations to improve safety conditions for pedestrians and bicyclist access from these residential areas to Windsor Middle School. Both residential areas include minority and low-income populations and Windsor Court Apartments includes residents who receive Section 8 housing assistance.

CBA 3 would alter traffic levels along Route 31 in the Mars Hill neighborhood. This neighborhood includes both minority and low-income populations.

As noted above, each of the CBAs would directly affect minority and low-income populations. All three CBAs would provide similar benefits to minority and low-income residents. CBA 3 would have the least adverse impacts to minority and low-income populations, while CBA 2 would have the greatest impact. This is consistent with the displacement and social impacts to the overall population. The impacts to minority and low-income populations from the CBAs are not considered disproportionately high and adverse since:

- The CBAs would provide offsetting economic and social benefits to the affected populations;
- Avoidance measures (Design Corridor) would be taken to reduce adverse impacts;
- Adverse impacts to minority and low-income populations would be proportional to impacts to the overall population;
- Minority and low-income populations have participated in and provided meaningful input throughout the transportation planning process; and
- Mitigation measures suggested in Section 0 would benefit minority and low-income populations as well as the overall population and continued outreach will identify measures to specifically benefit minority and low-income populations.

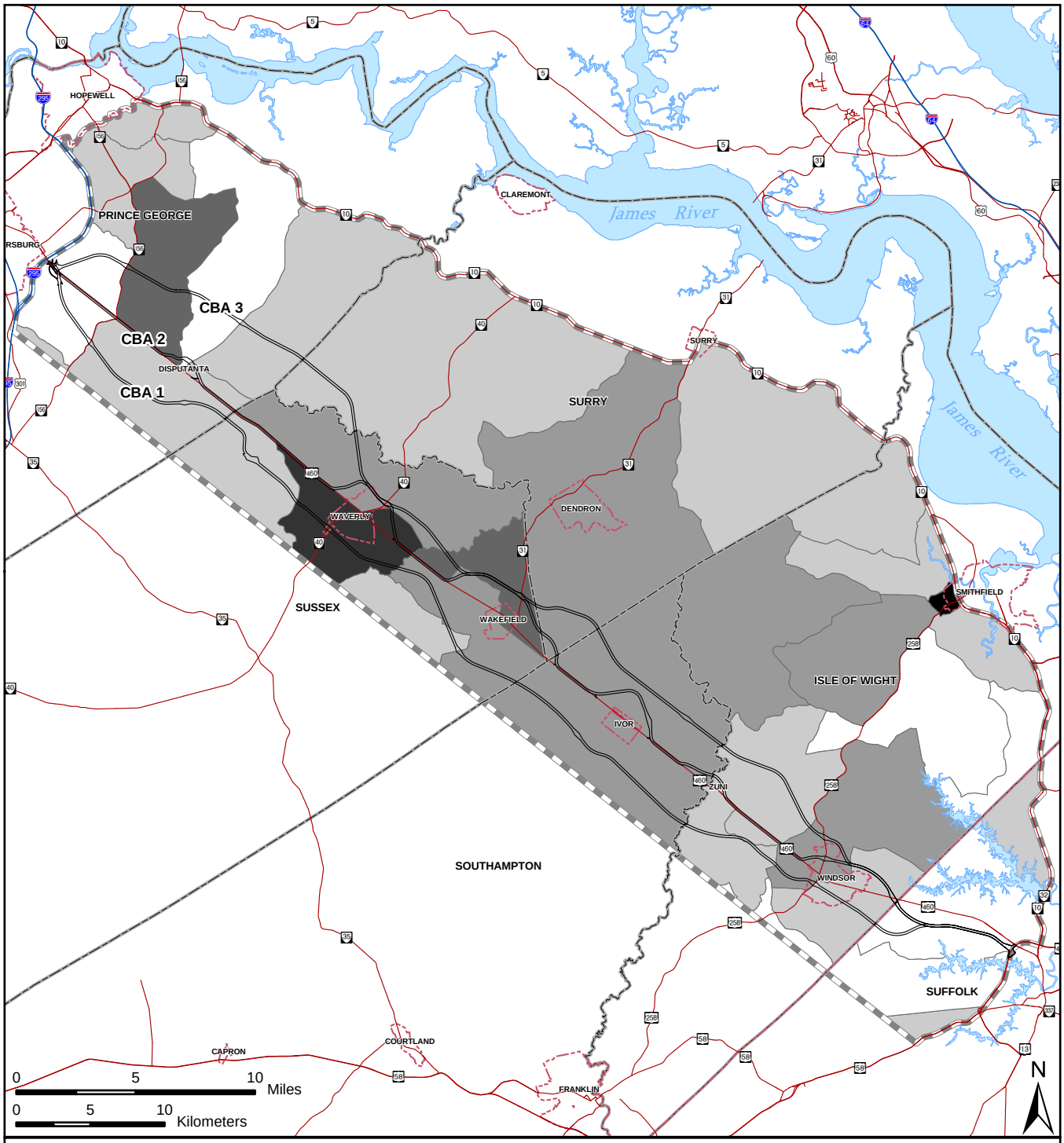


Percentage of Minority Residents By Census Block

- 0% - 20%
- 20% - 40%
- 40% - 60%
- 60% - 80%
- 80% - 100%

Study Area

FIGURE 2.3-2
MINORITY CONCENTRATION
BY CENSUS BLOCK



Census Block Group Low Income Percentage

Percent of Block Group Population Below Poverty Level

- 1% - 5%
- 6% - 10%
- 11% - 15%
- 16% - 20%
- 21% - 25%
- 26% - 30%

Study Area

FIGURE 2.3-3
LOW-INCOME POPULATION
BY CENSUS BLOCK GROUP

2.4 ECONOMIC CONSEQUENCES

2.4.1 Methodology and Assumptions

Economic impacts were addressed on several different levels. Direct impacts include the displacement of existing businesses and jobs and the loss of property tax revenues. Indirect and cumulative impacts include employment growth related to induced development, travel time savings and access benefits to industrial developments, and potential bypass effects to existing business districts. The cumulative economic impact analysis also includes a Benefit-Cost Analysis. These indirect and cumulative economic impacts are discussed in detail in the Indirect and Cumulative Technical Report, but summaries of these impacts are provided in the following sections.

Direct business and employment displacements and loss of property tax revenues were determined based on GIS analysis of aerial photography and field review. Both Planning and Design Corridor footprint impacts were evaluated. Due to the preliminary nature of the study, individual businesses were not contacted regarding potential displacements; therefore, it was not feasible to determine the specific relocation needs of these businesses. Secondary data sources and interviews with local officials were used to identify general characteristics. The name of the business establishment and the estimated number of employees were determined during field review and from analysis of 2003 ES-202 data obtained from the Virginia Employment Commission (VEC). Property tax revenues were calculated based the value of the land and improvements acquired by each alternative, including residences, businesses, farms, non-profit organizations and undeveloped parcels. The property tax values and property tax rates were provided by each locality's tax assessor's office. The value of the acquired property was multiplied by the local tax rate to determine the direct loss of property tax revenues for each county/city by alternative. Please refer to the Route 460 Right of Way Cost Technical Report for additional information regarding displacements, relocations, and property tax impacts.

An analysis of indirect land use changes was used to determine the potential for induced commercial development. This analysis was based on research models that predict the number of land developments that might be expected to occur if an interchange were to be constructed (i.e. Hartgen model). This model, coupled with data provided during information-gathering meetings with the localities and results of the travel demand model, was used to identify induced land use changes attributable to the CBAs. Additionally, the results of the travel demand model and interviews with local representatives identified the benefits of improved access and travel time savings for existing and planned industrial areas.

Right of way acquisitions, changes in access and travel times, and bypassing existing businesses have the potential to result in cumulative economic impacts. Specifically, the economic impact of the potential bypass effect of the CBAs has been a major concern of communities along the project corridor. Due to the interrelated nature of this assessment, these issues are addressed in detail in the *Indirect and Cumulative Technical Report*. Evaluation of cumulative impacts took place sequentially as follows:

- Identify past, present, and reasonably foreseeable future actions. These actions were noted in local comprehensive plans and through discussions with local governments and agencies.
- Establish the spatial boundaries or geographic limits of the cumulative analysis for each resource of concern. For socioeconomic resources, the county and city boundaries of Prince George, Sussex, Surry, Southampton, Isle of Wight, and Suffolk comprised the geographic limits.
- Team members then reviewed the long-term productivity or sustainability of resources potentially affected by the Route 460 project to identify the incremental effects of the proposed project.

With regard to potential bypass effects, the general findings of the literature review are best summarized by the following:

> "The many highway bypass studies carried out around the country provide a generally consistent story. They indicate new highways bypassing the central business district of a community are

seldom devastating or the savior of the area. The locational shift in traffic can cause some existing businesses to close up or relocate, but it can also create some new business opportunities. Net economic impacts on the broader community are usually relatively small (negative or positive). Downtown business districts having a strong identity as a destination for visitors or for local shoppers are the ones most likely to be strengthened due to the reduction in traffic delays through their centers. However, there is also a broad perception that adequate signage to the bypassed business center is an important need (and concern) for ensuring its continued success."

"Across the case studies, some positive and negative factors are common. The positive benefits of bypassing downtown areas commonly include the removal of heavy truck traffic from central areas and the opening up of additional industrial sites along the new route, thus attracting new investment from outside the region. The negative impacts sometimes include increases in sprawled, low density commercial and residential development that entail additional environmental and infrastructure costs." (Weisbrod, 2001)

Based on the literature review, the bypass impacts experienced by rural and small urban communities can be grouped into the following categories: general community, trucking and service sector, commuting workers, and retail. Local economic development and planning officials from bypassed communities consistently reported mostly positive impacts related to a bypass (FHWA, 2002). A distance of approximately 1 to 1.5 miles is the threshold for whether a traveler on the bypass will exit onto a secondary road in order to obtain goods and services in the nearby town. Findings and factors from the literature review were applied to the Route 460 Corridor and the associated impacts of the CBAs.

2.4.2 No-Build Alternative and TSM Alternative

The No-Build and TSM Alternatives would not displace any businesses. No loss of local property tax revenues would occur as a result of the No-Build or TSM Alternatives.

Changes in planned land use are not expected under either the 2026 No-Build or the TSM Alternative. It is assumed that approved projects and land uses will develop as planned. However, the increasing travel-time delays do not benefit the planned economic development along the Route 460 corridor. Travel times from Petersburg to Suffolk are anticipated to increase by 8 minutes (11%) between 2000 and 2026. These alternatives would not improve regional access or provide travel time savings to any industrial park, enterprise zone, or shipping-related industry within the study area.

2.4.3 CBAs

2.4.3.1 Displacement Impacts

CBAs 1 and 2 would displace businesses, while CBA 3 would not result in any business displacements. CBA 2 would result in the greatest number of estimated business displacements (31 Planning Corridor / 16 Design Corridor) and job displacements (265 Planning Corridor / 115 Design Corridor). A majority of these displacements would occur in Prince George County along Route 460 between I-295 and Disputanta. Table 2-9 presents the potential business displacements and employment loss by county for CBA 1 and 2. CBA 3 is not included in this table because there would not be any business displacements with this alternative. No displacements would occur within the business districts of the seven communities along Route 460. Displaced businesses would result in temporary losses of sales tax revenues. Discussions with local representatives and field review indicated that adequate relocation options are available for all displaced businesses to relocate within their current communities. Therefore, localities would not experience permanent sales tax revenue losses unless displaced businesses choose not to relocate in the same locality. This analysis does not attempt to estimate how many businesses would not relocate or reopen if displaced.

Table 2-9: POTENTIAL BUSINESS DISPLACEMENTS

Jurisdiction	Displacements	CBA 1		CBA 2	
		Planning Corridor	Design Corridor	Planning Corridor	Design Corridor
Isle of Wight	No. of Businesses	0	0	Sunshine Market Prangles Auto Repair Southern States	Sunshine Market Prangles Auto Repair Southern States
	Estimated No. of Employees	0	0	15	15
Prince George County	No. of Businesses	Rods Auto Auction Wagner's Service Center Prince George BBQ Bargain Corner Antiques East Coast-Race Track	Prince George BBQ	Rods Auto Auction Wagner's Service Center Prince George BBQ Bargain Corner Antiques East Coast - Race Track Ancos Toms Truck Service of Virginia KPAC B&D Collision Giovanis Auto Repair Spenser Propane Seibert's Shell Station Kevins Collision Trailer Outlet Spense Auto Sales Armstrong - Kimek HVAC Zuskins Auto Sales Country Classics Disputanta Animal Hospital	Prince George BBQ Bargain Corner Antiques Country Classics East Coast - Race Track KPAC Giovanis Auto Repair Spenser Propane Kevins Collision Disputanta Animal Hospital
	Estimated No. of Employees	40	10	180	80
Southampton County	No. of Businesses	0	0	460 Café Garage Jan's Restaurant	460 Café Garage
	Estimated No. of Employees	0	0	<10	<10
Surry County	No. of Businesses	0	0	0	0
	Estimated No. of Employees	0	0	0	0
Sussex County	No. of Businesses	0	0	Johns Auto Body Row Mic B&B Motors Murphy-Brown Johnson Concrete	Johns Auto Body Row Mic
	Estimated No. of Employees	0	0	60	<10
City of Suffolk	No. of Businesses	0	0	0	0
	Estimated No. of Employees	0	0	0	0

Jurisdiction	Displacements	CBA 1		CBA 2	
		Planning Corridor	Design Corridor	Planning Corridor	Design Corridor
Total for Study Area	No. of Businesses	5	1	31	16
	Estimated No. of Employees	40	10	265	115

Note: CBA 3 would not displace any businesses or employees. Therefore, it was not included in this table.
Source: Michael Baker, Jr., February 2005

2.4.3.2 Loss of Property Tax Revenues

Table 2-10 summarizes the fiscal impact of potential property tax revenue losses of the CBAs by jurisdiction. When land and improvements are acquired by VDOT from private property owners, the local governments no longer receive property tax revenues for that property. Properties include residences, businesses, farms, and non-profit organizations as well as undeveloped properties. While this potential loss of property tax revenues comprises a small proportion of each locality's budget, it is a direct economic impact of the construction of the CBAs. CBA 2 would have the greatest fiscal impact at a loss of $241,761 in property tax revenues in the Planning Corridor and $92,414 in the Design Corridor. CBA 3 would have the least fiscal impact with the loss of $99,601 in property tax revenues in the Planning Corridor and $57,430 in the Design Corridor. As with other impacts, the Design Corridor would greatly minimize potential fiscal impacts. These impacts do not account for the likely event that the improvements displaced (i.e., homes and businesses) will relocate/rebuild and, to some undetermined extent, offset the property tax losses with future gains.

As a percentage of total fiscal impact, Prince George County would sustain the greatest property tax losses under CBA 1 and CBA 2. Under CBA 3, the City of Suffolk would sustain the greatest property tax losses.

Table 2-10
FISCAL IMPACT TO JURISDICTIONS

Build Alternative		Locality	Total Assessed Value of Land & Improvements Acquired	Tax Rate	Total Fiscal Impact	Percent of Total Fiscal Impact
CBA 1	Planning Corridor	Isle of Wight	$4,833,697	$0.75	$36,253	26%
		Prince George	$5,988,254	$0.90	$53,894	38%
		Southampton	$1,236,920	$0.65	$8,040	6%
		Suffolk	$2,615,569	$1.08	$28,248	20%
		Surry	$0	$0.80	$0	0%
		Sussex	$2,306,252	$0.65	$14,991	11%
		Total	$16,980,691	-	$141,426	-
	Design Corridor	Isle of Wight	$3,065,737	$0.75	$22,993	28%
		Prince George	$3,640,195	$0.90	$32,762	41%
		Southampton	$401,174	$0.65	$2,608	3%
		Suffolk	$1,220,581	$1.08	$13,182	16%
		Surry	$0	$0.80	$0	0%
		Sussex	$1,407,722	$0.65	$9,150	11%
		Total	$9,735,408	-	$80,695	-

Build Alternative		Locality	Total Assessed Value of Land & Improvements Acquired	Tax Rate	Total Fiscal Impact	Percent of Total Fiscal Impact
CBA 2	Planning Corridor	Isle of Wight	$7,063,122	$0.75	$52,973	22%
		Prince George	$10,682,802	$0.90	$96,145	40%
		Southampton	$4,071,882	$0.65	$26,467	11%
		Suffolk	$3,077,703	$1.08	$33,239	14%
		Surry	$375,028	$0.80	$3,000	1%
		Sussex	$4,605,534	$0.65	$29,936	12%
		Total	$29,876,073	-	$241,761	-
	Design Corridor	Isle of Wight	$3,591,032	$0.75	$26,933	29%
		Prince George	$3,588,240	$0.90	$32,294	35%
		Southampton	$1,154,218	$0.65	$7,502	8%
		Suffolk	$1,672,532	$1.08	$18,063	20%
		Surry	$55,597	$0.80	$445	0%
		Sussex	$1,104,113	$0.65	$7,177	8%
		Total	$11,165,732	-	$92,414	-
CBA 3	Planning Corridor	Isle of Wight	$3,026,542	$0.75	$22,699	23%
		Prince George	$2,929,812	$0.90	$26,368	26%
		Southampton	$711,845	$0.65	$4,627	5%
		Suffolk	$3,079,353	$1.08	$33,257	33%
		Surry	$604,705	$0.80	$4,838	5%
		Sussex	$1,201,837	$0.65	$7,812	8%
		Total	$11,554,094	-	$99,601	-
	Design Corridor	Isle of Wight	$1,746,737	$0.75	$13,101	23%
		Prince George	$1,885,711	$0.90	$16,971	30%
		Southampton	$465,108	$0.65	$3,023	5%
		Suffolk	$1,672,532	$1.08	$18,063	31%
		Surry	$344,474	$0.80	$2,756	5%
		Sussex	$540,812	$0.65	$3,515	6%
		Total	$6,655,374	-	$57,430	-

Source: Michael Baker, Jr., February 2005

2.4.3.3 Potential Employment Growth

Potential employment growth associated with the CBAs results from two factors, temporary employment stemming from road construction and induced commercial or industrial development associated with new interchange areas. Construction of the CBAs would provide temporary local employment opportunities and support existing local businesses (e.g., gas stations and restaurants). As detailed in the *Indirect and Cumulative Technical Report*, all CBAs have the potential to result in land use changes when compared to the 2026 No-Build condition, and in some cases these land use changes may result in commercial or industrial growth near the interchange areas.

Overall, the likelihood for induced commercial development would be similar under CBA 1 or 3 at the interchanges in Waverly and Wakefield. At these communities, water and sewer are either available or localities indicated they would be made available. In addition, the traffic volumes on Route 40 and Route 31 are high enough to generate economic activity around the interchange area. These changes could include a light tourist / commercial services such as a gas station, convenience store, or a fast-food restaurant. The new businesses at these interchange locations would provide additional employment opportunities, sales tax revenues, and increased property tax revenues for Sussex County. In addition, CBA 3 may result in additional commercial development in Ivor on Route 620, north of Windsor on Route 258, and east of Windsor on Route 460 at the Isle of Wight County and Suffolk City lines. These land use changes would provide additional employment opportunities, sales tax revenues, and increased property tax revenues for Southampton and Isle of Wight Counties.

Given the traffic volumes at the CBA 2 interchange with Route 40 and Route 620, the availability of water and sewer, and the respective proximity to Waverly and Ivor, it is likely that these new interchanges will also experience a change in land use. These changes could include a travel-oriented business such as a gas station, convenience store, or a fast-food restaurant. Similar changes would be anticipated with CBA 2 east of Windsor on Route 460 at the Isle of Wight County and Suffolk City lines. These land use changes would provide additional employment opportunities, sales tax revenues, and increased property tax revenues for Sussex, Southampton, and Isle of Wight Counties. All three CBAs would result in induced commercial land use changes at the Route 58 bypass in Suffolk.

2.4.3.4 Travel Time Savings and Benefits to Existing and Planned Industrial Areas

Travel times are also important factors in the cost of freight shipping. Any improvement in travel times and travel reliability results in a direct savings to the shipper in terms of fuel costs, labor expenses, and shipping efficiencies. Because Route 460 has a higher than average percentage of truck traffic, this savings would be substantial to the trucking and shipping industry.

> "The unpredictability of freight transportation carries a price tag. According to FHWA's *The Freight Story: A National Perspective on Enhancing Freight Transportation*, shippers and carriers assign a value to increases in travel time ranging from $25 to almost $200 per hour, depending on the product carried. The cost of unexpected delay for trucks adds significantly to these numbers. Hence, congestion increases freight costs and has a negative effect on the U.S. economy.
>
> "According to FHWA's research, short-term benefits of an improved road network include immediate reductions in transportation costs due to decreases in transit time and improved reliability. Long-term benefits include efficiency gains and further cost reductions resulting from improvements in logistics and supply chain management and changes in a firm's output or location." (Johnson, 2004)

These types of benefits would be fully realized under either CBA 1 or CBA 3 and, to a much lesser extent, under CBA 2.

All three CBAs provide improved access and travel time savings for existing and planned industrial development. Based on a review of the results of the travel demand model and coordination with local representatives, the following impacts would occur to existing and planned industrial areas:

- Prince George County's Opportunity Zone – improved travel times on Route 460 east with CBA 1, 2, and 3 for Southpoint Industrial Park, planned Norfolk Southern Facility, and existing businesses in New Bohemia. CBA 3 would remove developable property within the Southpoint Industrial Park and CBA 2 would displace existing businesses in New Bohemia.
- Sussex County's Regional Industrial Park and Industrial development along Route 602 – CBA 1 provides direct access to Atlantic Waste and Sussex I and II (prisons); however, it also bisects developable parcels.

- Town of Waverly's industrial area along Route 40 – CBA 1 would provide direct access to parcels zoned and planned for industrial use.
- Isle of Wight County/Town of Windsor – The Norfolk Southern property, located southeast of the Town of Windsor, is one of the largest developable tracts of land on the East Coast (1,600 acres). Windsor officials indicated that there are efforts underway to develop this property as an inland port facility with a multi-modal industrial park. CBA 2 and 3's interchange at Route 460 east of Windsor would provide direct access to this proposed facility and the existing Shirley Holland Industrial Park. CBA 1 would provide an interchange on Route 258 in an area planned for industrial expansion.

2.4.3.5 Potential Bypass Effects

Communities have expressed concern regarding the potential bypass effects for existing businesses along Route 460 associated with the proposed project. Due to the interrelated nature of this analysis, these issues are addressed in detail in the *Indirect and Cumulative Technical Report* (Section 4.6.5.2) and findings are summarized in the following paragraphs.

As noted in the methodology, it is assumed that a distance of approximately 1 to 1.5 miles is the threshold for whether a traveler on the bypass will exit onto a secondary road in order to obtain goods and services in the nearby town. As shown in Table 2-11, all of the proposed interchanges under CBA 2 are within this range. Given the proximity of the bypassed communities from the bypass, it is likely that travelers on CBA 2 would travel into the downtown area to obtain goods and services.

Under CBA 1 or 3, the further the bypass interchange is from the downtown area, the more likely it is that through-traffic will continue to the next exit that offers goods and services within this 1 to 1.5 mile range. In situations where the bypass interchange is beyond this range, it is possible that businesses in the bypassed communities' downtown can move their businesses to the interchange areas to capture through-traffic business. However, such a decision to relocate a business is dependent upon numerous factors, including: the availability of land, water, and sewer; traffic volumes on the interchange crossroad warranting economic development; and the willingness and ability to build or relocate.

Given that all six of the bypassed communities have some sort of highway-related business, such businesses will likely experience a short-term decline in revenues due to the shift of through-traffic. The towns of Waverly, Wakefield, and Windsor have the greatest number of highway-related businesses. Therefore, these towns could be the most adversely affected. However, these towns are also the largest of the communities along the Route 460 corridor and are more self-sufficient than communities such as Disputanta, Ivor, and Zuni. This self-sufficiency and local support of these highway-related businesses could offset the reduction in through-traffic business. With the shifting of traffic to CBA 1, 2, or 3, access to businesses in the downtown areas becomes easier and more convenient.

A potentially offsetting benefit of the reduced through-traffic in the bypassed communities is the opportunity to enhance local streetscapes and provide additional parking, pedestrian facilities, and other amenities that have been proven to attract investment to downtown areas.

Table 2-11
DISTANCE OF BYPASS INTERCHANGE TO ROUTE 460 IN DOWNTOWN AREA

BYPASSED COMMUNITY	CBA 1	CBA 2	CBA 3
Disputanta	1.5 miles	0.5 mile	3.3 miles
Waverly	1.6 miles	1.2 miles	1.2 miles
Wakefield	2.9 miles	1.3 miles	1.3 miles
Ivor	2.3 miles	0.9 mile	2.5 miles
Zuni*	---	---	---
Windsor	0.5 miles	0.8 mile	1.5 miles

* No interchange access would be provided to Zuni via CBA 1, 2, or 3. However, CBA 2 would provide at-grade intersections on existing Route 460 at the western and eastern sides of Zuni.

Source: Michael Baker, Jr., February 2005

2.4.4 Benefit Cost Analysis : User Benefit and Cost

Table 2-12 shows a summary of the discounted benefits, costs, and the key economic measures for the proposed Route 460 CBAs.

Capital cost includes the cost of constructing the facility. Benefits represent the difference in travel time cost, vehicle operating cost and accident costs between the existing condition and each CBA. Agency cost is the cost incurred by VDOT, calculated as the total cost of construction plus maintenance and operation less the salvage value. NPV, net present value, is the difference between the discounted user benefit and discounted agency cost. BCR, benefit-cost-ratio, is the ratio derived by dividing the discounted user benefit by the discounted agency cost. The results of the BCA are shown in Table 2-12. A BCA ratio of 1 or greater indicates an option where the benefits outweigh the costs.

Table 2-12
SUMMARY OF USER BENEFIT AND COST (Millions $)

Measures	CBA 1	CBA 2	CBA 3
Capital Cost	$470.27	$584.59	$490.08
Benefits	$498.87	$450.00	$515.29
Agency Cost	$428.87	$549.25	$451.60
NPV	$70.01	-$99.25	$63.69
BCR	1.16	0.82	1.14

Table 2-12 shows that CBA 1 has a positive NPV and a BCR over 1.0. Terms of higher level of service and faster travel time at comparatively smaller improvement cost produces these positive results.

The table also shows that CBA 2 has a negative NPV and BCR less than 1.0. The negative NPV and less than 1.0 BCR is a result of less travel time savings due to slower speeds and a large capital investment due to the bypasses.

CBA 3 shows a positive NPV and a BCR higher than 1.0. CBA 3 provides a faster travel option.

Conclusions

- CBAs 1 and 3 make good economic sense and are a sound investment at discount rates of 7% or lower. These rates are recommended by FHWA and OMB for major capital projects.

- Because CBAs 1 and 3 are feasible at 7%, they would also be feasible at a lower discount rate.

- The 2000 FHWA discount rate of 7.0% results in a BCR of 0.82 for CBA 2, an unfeasible result. However, if a lower discount rate were used, the CBA may have a BCR of 1.0 or greater. This BCR does not test this scenario.

2.5 POTENTIAL MITIGATION

2.5.1 Social/Community Mitigation

Impacts to social or community resources vary depending on the CBA. Potential minimization of the effects has been evaluated with Design Corridor options. VDOT will seek to minimize the number of displacements during final design as the Planning Corridor allows opportunities for avoidance within the 500-foot corridor. To minimize loss of residents, businesses, farms, and non-profit organizations from each community, VDOT ROW staff will coordinate closely with each locality to determine the feasibility of allowing displacees to relocate on their existing property, if they so desire. This will be addressed on a case-by-case basis and will be determined based on local regulations regarding minimum lot size, zoning, and availability of water and sewer.

To minimize impacts to active farming operations, VDOT will consider options to maintain agricultural access to bisected agricultural parcels. During final design, VDOT will work to minimize uneconomic remnants.

At interchange ramp locations where traffic increases or added friction might affect pedestrian or bicycle travel on crossroads, VDOT will consider the provision of sidewalks and/or bike paths. Opportunities exist to tie into existing or planned sidewalks within some communities.

VDOT will identify context sensitive design features such as landscaping, berms, and noise walls to reduce noise, visual, and community impacts. Noise barriers will be considered when deemed effective and cost feasible. VDOT will coordinate with the local governments and public to identify which features would be appropriate for each specific communities. VDOT acknowledges that different communities may have different mitigation needs or preferences and these specific measures will be identified after a preferred alternative is selected.

As discussed in Section 2.3.1.3, the CBAs would not result in disproportionately high and adverse impacts to minority or low-income populations and, therefore, specific environmental justice mitigation is not proposed. However, mitigation options presented in the previous paragraph will also benefit minority and low-income populations. Furthermore, VDOT's relocation policies provide an added benefit to low-income displacees, some of whom are also a minority. The relocation program outlines special cases where a displacee is eligible for a price differential payment in addition to the fair market value of the property to help defray the costs necessary to purchase a comparable, decent, safe, and sanitary replacement dwelling in a similar neighborhood or housing of last resort. This price differential payment may not exceed $22,500 for homeowners or $5,250 for renters and can also be used toward a down payment, increased mortgage interest costs, and incidental expenses associated with purchasing a home (e.g., title search, recording fees, closing costs).

As the relocation analysis noted, an adequate supply of housing is available for sale or rent within a comparable price range. However, if appropriate housing cannot be found, VDOT can provide necessary housing in a number of ways through an administrative process known as housing of last resort. Housing of last resort may include relocation in a rehabilitated dwelling, construction of an addition to a relocation

dwelling, purchase of land and construction of a new replacement dwelling, a replacement housing payment in excess of the price differential, or a direct loan that would enable the displaced person to construct or contract the construction of a replacement dwelling. This is not anticipated to be necessary on this project, but it remains a mitigation option should the need arise for relocation housing for low- to moderate-income households.

2.5.2 Economic Mitigation

Economic mitigation for the CBAs includes the following:

- VDOT's right-of-way acquisition and relocation program will be done in accordance with the Federal Uniform Relocation Assistance and real Property Acquisition Act of 1970, as amended and with the Surface Transportation and Uniform Relocation and Assistance Act of 1987 (STURRA). Relocation resources will be available without discrimination.
- VDOT will coordinate closely with each community to determine appropriate signage at interchange areas. The signage may designate historic or shopping districts and may be used to minimize potential bypass effects.
- To the extent possible, final design will consider plans for new industrial developments to minimize footprint impacts to these planned facilities.

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Prince George County, Bill Bailey, Economic Development Director, Leon Hughes, Director of Planning, and Jerry Skalsky, Board of Supervisors. July 14, 2004.

Southampton County, Michael Johnson, Southampton County's County Administrator and Waverly Coggsdale, Assist. County Administrator , July 10, 2003 and July 9, 2004.

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